

# SEQUENCE LISTING

<110> Tang, Y. Tom  
 Liu, Chenghua  
 Zhou, Ping  
 Asundi, Vinod  
 Ren, Feiyan  
 Zhao, Qing A.  
 Zhang, Jie  
 Wang, Jian-Rui  
 Wehrman, Tom  
 Drmanac, Radoje T.

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Lys Glu Ile Phe Gly Gln Thr Ile Ile His His His Ile Pro Phe Asn  
115 120 125

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His Leu Asn Tyr Thr Glu Phe Thr Gln Phe Leu Gln Glu Leu Gln Leu	
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gaa cat gca aga caa gcc ttt gca ctc aaa gac aaa agc aaa agt ggc	645
Glu His Ala Arg Gln Ala Phe Ala Leu Lys Asp Lys Ser Lys Ser Gly	
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Met Ile Ser Gly Leu Asp Phe Ser Asp Ile Met Val Thr Ile Arg Ser	
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His Met Leu Thr Pro Phe Val Glu Glu Asn Leu Val Ser Ala Ala Gly	
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Gly Ser Ile Ser His Gln Val Ser Phe Ser Tyr Phe Asn Ala Phe Asn	
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Ser Ala Ile Arg Tyr Gly Gln Val Thr Pro Leu Glu Ile Asp Ile Leu	
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Lys	Phe	Thr	Arg	Arg	Asp	Gly	Ser	Val	Pro	Leu	Pro	Ala	Glu	Val	Leu	
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Glu	Ile	Val	Lys	Ile	Arg	Leu	Gln	Val	Ala	Gly	Glu	Ile	Thr	Thr	Gly	
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ccc	aga	gtc	agc	gcc	ctg	aat	gtg	ctc	cgg	gac	ttg	gga	att	ttt	ggc	1557
Pro	Arg	Val	Ser	Ala	Leu	Asn	Val	Leu	Arg	Asp	Leu	Gly	Ile	Phe	Gly	
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Phe	Trp	Lys	Gly	Thr	Ala	Ala	Arg	Val	Phe	Arg	Ser	Ser	Pro	Gln	Phe	

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Arg Ile Ala Asp Leu Pro Pro Ala Asn Pro Asp His Ile Gly Gly Tyr			
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Arg Leu Ala Thr Ala Thr Phe Ala Gly Ile Glu Asn Lys Phe Gly Leu			
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Tyr Leu Pro Lys Phe Lys Ser Pro Ser Val Ala Val Val Gln Pro Lys			
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Ala Ala Val Ala Ala Thr Gln *			
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Arg Asn Thr Lys Tyr Leu Asp Leu Lys Asn Ser Gln Glu Met Leu Arg		
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Tyr Lys Glu Val Cys Tyr Tyr Met Leu Phe Ala Leu Ala Ala Tyr Gly		
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Trp Pro Met Tyr Leu Met Arg Lys Pro Ala Cys Gly Leu Cys Gln Leu		
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Ala Arg Ser Cys Ser Cys Cys Leu Cys Pro Ala Arg Pro Arg Phe Ala		
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Pro Gly Val Thr Ile Glu Glu Asp Asn Cys Cys Gly Cys Asn Ala Ile		
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Ala Ile Arg Arg His Phe Leu Asp Glu Asn Met Thr Ala Val Asp Ile		
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Val Tyr Thr Ser Cys His Asp Ala Val Tyr Glu Thr Pro Phe Tyr Val		
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Leu Ser Pro Lys Asp Ala Leu Thr Asp Leu Thr Gly Asp Ala Glu Arg		
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Leu Ser Gln Ala Phe Gly Arg Asp Leu Gly Arg Gly Thr Lys His Tyr		
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Gly Leu Ile Val Val Gly His Ser Leu Gly Ala Gly Thr Ala Ala Ile		

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Tyr Ser Pro Pro Gly Gly Leu Leu Ser Glu Asp Ala Met Glu Tyr Ser			
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Lys Glu Phe Val Thr Ala Val Val Leu Gly Lys Asp Leu Val Pro Arg			
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Ile Gly Leu Ser Gln Leu Glu Gly Phe Arg Arg Gln Leu Leu Asp Val			
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Leu Gln Arg Ser Thr Lys Pro Lys Trp Arg Ile Ile Val Gly Ala Thr			
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Lys Cys Ile Pro Lys Ser Glu Leu Pro Glu Glu Val Glu Val Thr Thr			
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Val His Asn His Pro Ala Glu Gln Cys Cys Cys Cys Glu Gln Glu Glu			
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Pro Thr Tyr Phe Ala Ile Trp Gly Asp Asn Lys Ala Phe Asn Glu Val			
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Ile Ile Ser Pro Ala Met Leu His Glu His Leu Pro Tyr Val Val Met			
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Thr Pro Glu Leu Ile Phe Gln Gln Gln Pro Leu Pro Thr Gly Pro Pro			
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Met Pro Thr Gly Leu Ala Leu Glu Leu Pro Thr Ala Asp His Arg Asn	
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Ser Glu Gly Arg Leu Leu Ser Pro Val Val Ala Ala Ala Arg Gln	
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Leu His Asn Gly Arg Leu Gly Asp Ser Pro Ser Pro Gln Val Leu Glu	
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Phe Ala Glu Phe Ile Asp Ser Leu Phe Asn Leu Asp Ser Lys Ser Ser	
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Pro Leu Ser Ser Ser Gly Glu Leu Met Asp Leu Thr Pro Thr Gly Leu	
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Leu Arg Glu Asn Asp Phe Ile Glu Ile Glu Leu Asp Arg Gln Glu Leu						
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Thr Tyr Gln Glu Leu Leu Lys Val Cys Cys Cys Glu Leu Gly Val Asn						
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Pro Asp Gln Val Glu Lys Ile Arg Lys Leu Pro Asn Thr Leu Leu Arg						
80 85 90						
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Lys Asp Lys Asp Val Ala Arg Leu Gln Asp Phe Gln Glu Leu Glu Leu						
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Val Leu Met Ile Ser Glu Asn Asn Phe Leu Phe Arg Asn Ala Ala Ser  
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gctaggtgcc agtaatatgg atctaaagct taaggactat ggaatggatc tcattgaagt	360
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	Met Ser Pro Phe
	1
cta cct gcc acg tat cgg cga agg ttg gga ctc gac tgg tgt ttg atc	582
Leu Pro Ala Thr Tyr Arg Arg Arg Leu Gly Leu Asp Trp Cys Leu Ile	
5 10 15 20	
acg atg gga aaa tca tcc aga aaa ccc cct acc ccc acc cca gag gga	630
Thr Met Gly Lys Ser Ser Arg Lys Pro Pro Thr Pro Thr Pro Glu Gly	
25 30 35	
ccc aca gtc agc gtg aag cag tta ttt tct acg cta cct gtg cgc cat	678
Pro Thr Val Ser Val Lys Gln Leu Phe Ser Thr Leu Pro Val Arg His	
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55 60 65	
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Ala Phe Cys Arg Asp Cys Gln Phe Leu Glu Gly Ser Pro Ala Met Leu	
70 75 80	
cct gta cag cct gca aaa ctt aca gaa cct gct aag gcc atc aaa cct	822
Pro Val Gln Pro Ala Lys Leu Thr Glu Pro Ala Lys Ala Ile Lys Pro	
85 90 95 100	
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Ile Asp Arg Lys Ser Val His Gln Ile Cys Ser Gly Pro Val Val Leu	
105 110 115	
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Ser Leu Ser Thr Ala Val Lys Lys Ile Val Gly Asn Ser Leu Asp Ala	
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Gly Ala Thr Asn Ile Asp Leu Lys Leu Lys Asp Tyr Gly Met Asp Leu	

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ggc tta tct ctt tca gct ctg aaa cat cac aca tct aag att cga gag			1062
Gly Leu Ser Leu Ser Ala Leu Lys His His Thr Ser Lys Ile Arg Glu			
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ttt gcc gac cta act cgg gtt gaa act ttt ggc ttt cag ggg aaa gct			1110
Phe Ala Asp Leu Thr Arg Val Glu Thr Phe Gly Phe Gln Gly Lys Ala			
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Val Ser Ala Lys Val Gly Thr Arg Leu Val Phe Asp His Asp Gly Lys			
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Ile Ile Lys Lys Thr Pro Tyr Pro His Pro Arg Gly Thr Thr Val Ser			
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Val Lys Gln Leu Phe Ser Thr Leu Pro Val Arg His Lys Glu Phe Gln			
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Arg Asn Ile Lys Lys Lys Arg Ala Cys Phe Pro Phe Ala Phe Cys Arg			
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Asp Cys Gln Phe Leu Glu Gly Ser Pro Ala Met Leu Pro Val Gln Pro			
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Thr Arg Glu Gly Ile Thr Glu Ala Val Gly *			
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                                           Met Ala Phe Leu Lys
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ctc cgt gac cag cca tca ctg gtg caa gct ata ttt aac gga gat cct      522
Leu Arg Asp Gln Pro Ser Leu Val Gln Ala Ile Phe Asn Gly Asp Pro
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gat gaa gtt cga gca cta ata ttt aag aaa gaa gat gtt aac ttt cag      570
Asp Glu Val Arg Ala Leu Ile Phe Lys Lys Glu Asp Val Asn Phe Gln
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gac aat gaa aag cga acc cca ttg cac gcc gca gct tac ctt gga gat      618
Asp Asn Glu Lys Arg Thr Pro Leu His Ala Ala Ala Tyr Leu Gly Asp
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gca gaa atc att gaa ctt ctt att tta tct gga gct aga gtt aat gcc      666
Ala Glu Ile Ile Glu Leu Leu Ile Leu Ser Gly Ala Arg Val Asn Ala
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aaa gac agc aaa tgg ttg aca cct tta cac aga gca gtt gca tct tgt      714
Lys Asp Ser Lys Trp Leu Thr Pro Leu His Arg Ala Val Ala Ser Cys
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agt gag gaa gca gtt cag gta ctt ttg aag cat tct gca gat gtt aat      762
Ser Glu Glu Ala Val Gln Val Leu Leu Lys His Ser Ala Asp Val Asn
                        90                        95                        100

gct cga gac aaa aat tgg caa acc cct tta cat ata gct gct gct aat      810
Ala Arg Asp Lys Asn Trp Gln Thr Pro Leu His Ile Ala Ala Ala Asn
                        105                        110                        115

aaa gct gta aag tgt gct gaa gct ttg gta cct ctt ctg agt aat gta      858
Lys Ala Val Lys Cys Ala Glu Ala Leu Val Pro Leu Leu Ser Asn Val
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cct ttg cac ata gca gca cgg tat ggc cat gag ctg ctg atc aac act Pro Leu His Ile Ala Ala Arg Tyr Gly His Glu Leu Leu Ile Asn Thr 345 350 355	1530

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agg act tgt cta cat gca gct gca gct gga ggg aat ttg gag tgc cta Arg Thr Cys Leu His Ala Ala Ala Gly Gly Asn Leu Glu Cys Leu 410 415 420	1722
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Ser Gly Arg Thr Pro Leu Asp Leu Ala Ala Phe Lys Gly His Val Glu  
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680 685 690

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790 795 800 805

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Cys Leu Gln Leu Leu Leu Ser His Asn Ala Gln Val Asn Ser Val Asp			
840	845	850	
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Asn Thr Val Glu Met Leu Val Ser Ser Ala Ser Ala Glu Leu Thr Leu			
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caa gat aac agt aaa aat act gcc ctc cat ttg gct tgt agc aag ggt			3162
Gln Asp Asn Ser Lys Asn Thr Ala Leu His Leu Ala Cys Ser Lys Gly			
890	895	900	
cat gaa act agt gcc ttg tta ata ctg gaa aag ata aca gat aga aac			3210
His Glu Thr Ser Ala Leu Leu Ile Leu Glu Lys Ile Thr Asp Arg Asn			
905	910	915	
ctc atc aat gca acc aac gca gcc ttg caa aca cct ctg cat gtt gct			3258
Leu Ile Asn Ala Thr Asn Ala Ala Leu Gln Thr Pro Leu His Val Ala			
920	925	930	
gcc cga aat ggg cta aca atg gtg gtt cag gaa ctt ttg gga aaa gga			3306
Ala Arg Asn Gly Leu Thr Met Val Val Gln Glu Leu Leu Gly Lys Gly			
935	940	945	
gca agt gtg ctt gca gta gat gaa aat ggc tat acc cca gct ttg gcc			3354
Ala Ser Val Leu Ala Val Asp Glu Asn Gly Tyr Thr Pro Ala Leu Ala			
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Cys Ala Pro Asn Lys Asp Val Ala Asp Cys Leu Ala Leu Ile Leu Ala			
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acc atg atg cct gtc tca tca agt agt cct tta tca tcc tta aca ttc			3450
Thr Met Met Pro Val Ser Ser Ser Ser Pro Leu Ser Ser Leu Thr Phe			
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aat gcc att aac cgt tat acc aac acc tca aaa aca gtc agc ttt gaa			3498
Asn Ala Ile Asn Arg Tyr Thr Asn Thr Ser Lys Thr Val Ser Phe Glu			
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gct ttg ccc atc atg agg aat gaa cct agc tcc tat tgc agt ttc aat			3546
Ala Leu Pro Ile Met Arg Asn Glu Pro Ser Ser Tyr Cys Ser Phe Asn			
1015	1020	1025	
aac att gga ggg gaa cag gag tac tta tac act gac gtg gat gag ctc			3594
Asn Ile Gly Gly Glu Gln Glu Tyr Leu Tyr Thr Asp Val Asp Glu Leu			
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 Asn Asp Ser Asp Ser Glu Thr Tyr \*  
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 Arg Leu Ala Trp Gly Arg Asp Glu Asn Glu Lys Ile Trp Asp Glu Asp  
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gct aaa act aac gct ggg gca ggg tct ggg gcc aaa ctt cag ggt gat 605  
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 Ser Glu Val Lys Pro Glu Val Ser Leu Gly Leu Glu Asp Cys Pro Gly  
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gta aaa gag aag gcc cat tca gga tcc cac agc gga ggt ggt cta gag	701
Val Lys Glu Lys Ala His Ser Gly Ser His Ser Gly Gly Gly Leu Glu	
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Ala Lys Ala Lys Ala Leu Phe Asn Thr Leu Lys Glu Gln Ala Ser Ala	
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aag gca ggc aaa ggg gct agg gtg ggt acc atc tct ggg aac agg acc	797
Lys Ala Gly Lys Gly Ala Arg Val Gly Thr Ile Ser Gly Asn Arg Thr	
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ctt gca ccg agt tta ccc tgc cca gga ggc agg ggt gga ggc tgc cac	845
Leu Ala Pro Ser Leu Pro Cys Pro Gly Gly Arg Gly Gly Gly Cys His	
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Pro Thr Arg Ser Gly Ser Arg Ala Gly Gly Arg Ala Ser Gly Lys Ser	
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Lys Gly Lys Ala Arg Ser Lys Ser Thr Arg Ala Pro Ala Thr Thr Trp	
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Pro Val Arg Arg Gly Lys Phe Asn Phe Pro Tyr Lys Ile Asp Asp Ile	
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Leu Ser Ala Pro Asp Leu Gln Lys Val Leu Asn Ile Leu Glu Arg Thr	
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aat gat cct ttt att caa gaa gta gcc ttg gtc act ctg ggt aac aat	1085
Asn Asp Pro Phe Ile Gln Glu Val Ala Leu Val Thr Leu Gly Asn Asn	
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Ala Ala Tyr Ser Phe Asn Gln Asn Ala Ile Arg Glu Leu Gly Gly Val	
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cca att att gca aaa ctg ata aaa aca aaa gac ccc ata att agg gaa	1181
Pro Ile Ile Ala Lys Leu Ile Lys Thr Lys Asp Pro Ile Ile Arg Glu	
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Lys Thr Tyr Asn Ala Leu Asn Asn Leu Ser Val Asn Ala Glu Asn Gln	
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Gly Lys Ile Lys Thr Tyr Ile Ser Gln Val Cys Asp Asp Thr Met Val	
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Cys Arg Leu Asp Ser Ala Val Gln Met Ala Gly Leu Arg Leu Leu Thr	
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cag att atg aaa cta att ata aac ttt act gaa aat cca gcc atg aca Gln Ile Met Lys Leu Ile Ile Asn Phe Thr Glu Asn Pro Ala Met Thr 350 355 360	1469
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Met Thr Met Thr Thr Met Pro Glu Ser Leu	
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Asn Ser Pro Val Ser Gly Lys Ala Val Phe Met Glu Phe Gly Pro Pro	
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Asn Gln Gln Met Ser Pro Ser Pro Met Ser His Gly His Tyr Ser Met	
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His Cys Leu His Ser Ala Gly His Ser Gln Pro Asp Gly Ala Tyr Ser	
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Ser Ala Ser Ser Phe Ser Arg Pro Leu Gly Tyr Pro Tyr Val Asn Ser	
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Val Ser Ser His Ala Ser Ser Pro Tyr Ile Ser Ser Val Gln Ser Tyr	
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Pro Gly Ser Ala Ser Leu Ala Gln Ser Arg Leu Glu Asp Pro Gly Ala	
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Gln Leu Gln Ala Leu Asn Arg Arg Phe Gln Gln Thr Gln Tyr Leu Ala	
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Met Lys Gln Gly Gly Ala Ala Leu Glu Gly Ser Ala Leu Ala Asn Gly	
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Met Arg Ala Ala Arg Ala Leu  
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cag atc tgc ata gac aag aag tgt cca gat tac acc tgc ccc atc acg Gln Ile Cys Ile Asp Lys Lys Cys Pro Asp Tyr Thr Cys Pro Ile Thr 810 815 820			2622
ttc tcc tcc ccg gct gac atc acc atc ctg ctg gac ggc tcc gcc agc Phe Ser Ser Pro Ala Asp Ile Thr Ile Leu Leu Asp Gly Ser Ala Ser 825 830 835			2670
gtg ggc agc cac aac ttt gac acc acc aag cgc ttc gcc aag cgc ctg Val Gly Ser His Asn Phe Asp Thr Thr Lys Arg Phe Ala Lys Arg Leu 840 845 850 855			2718
gcc gag cgc ttc ctc aca gcg ggc agg acg gac ccc gcc cac gac gtg Ala Glu Arg Phe Leu Thr Ala Gly Arg Thr Asp Pro Ala His Asp Val 860 865 870			2766
cgg gtg gcg gtg gtg cag tac agc ggc acg ggc cag cag cgc cca gag Arg Val Ala Val Val Gln Tyr Ser Gly Thr Gly Gln Gln Arg Pro Glu 875 880 885			2814

cgg gcg tcg ctg cag ttc ctg cag aac tac acg gcc ctg gcc agt gcc	2862
Arg Ala Ser Leu Gln Phe Leu Gln Asn Tyr Thr Ala Leu Ala Ser Ala	
890 895 900	
gtc gat gcc atg gac ttt atc aac gac gcc acc gac gtc aac gat gcc	2910
Val Asp Ala Met Asp Phe Ile Asn Asp Ala Thr Asp Val Asn Asp Ala	
905 910 915	
ctg ggc tat gtg acc cgc ttc tac cgc gag gcc tcg tcc ggc gct gcc	2958
Leu Gly Tyr Val Thr Arg Phe Tyr Arg Glu Ala Ser Ser Gly Ala Ala	
920 925 930 935	
aag aag agg ctg ctg ctc ttc tca gat ggc aac tcg cag ggc gcc acg	3006
Lys Lys Arg Leu Leu Leu Phe Ser Asp Gly Asn Ser Gln Gly Ala Thr	
940 945 950	
ccc gct gcc atc gag aag gcc gtg cag gaa gcc cag cgg gca ggc atc	3054
Pro Ala Ala Ile Glu Lys Ala Val Gln Glu Ala Gln Arg Ala Gly Ile	
955 960 965	
gag atc ttc gtg gtg gtc gtg ggc cgc cag gtg aat gag ccc cac atc	3102
Glu Ile Phe Val Val Val Val Gly Arg Gln Val Asn Glu Pro His Ile	
970 975 980	
cgc gtc ctg gtc acc ggc aag acg gcc gag tac gac gtg gcc tac ggc	3150
Arg Val Leu Val Thr Gly Lys Thr Ala Glu Tyr Asp Val Ala Tyr Gly	
985 990 995	
gag agc cac ctg ttc cgt gtc ccc agc tac cag gcc ctg ctc cgc ggt	3198
Glu Ser His Leu Phe Arg Val Pro Ser Tyr Gln Ala Leu Leu Arg Gly	
1000 1005 1010 1015	
gtc ttc cac cag aca gtc tcc agg aag gtg gcg ctg ggc tag cccaccc	3247
Val Phe His Gln Thr Val Ser Arg Lys Val Ala Leu Gly *	
1020 1025	
tgcacgccgg caccaaacc tgtcctccca ccctcccca ctcatcacta aacagagaaa	3307
agcttggaag gccaggacac aacgctgctg cctgctttgt gcagggtcct ccggggctca	3367
gccctgagtt ggcacacct gcgcagggcc ctctggggct cagccctgag ctagtgtcac	3427
ctgcacaggg ccctctgggg ctcagccctg agctggcgct acctgtgcag ggccctctgg	3487
ggctcagccc tgagctggcc tcacctgggt tccccacccc gggtctcct gccctgccct	3547
cctgcccgcc ctccctcctg cctgcgcagc tcttcccta ggcacctctg tgctgcgtcc	3607
caccagcctg agcaagacgc cctctcgggg cctgtgccgc actagcctcc ctctcctctg	3667
tccccatagc tgggttttcc caccaatcct cacctaacag ttactttaca attaaactca	3727
aagcaagctc ttctcctcag cttggggcag ccattggcct ctgtctcggt ttgggaaacc	3787
aaggtcagga ggccgttgca gacataaatc tcggcgactc ggccccgtct cctgagggtc	3847

ctgctgggtga ccggcctgga ccttggccct acagccctgg aggccgctgc tgaccagcac 3907  
 tgaccccgac ctcagagagt actcgagagg gcgctggctg cactcaagac cctcgagatt 3967  
 aacggtgcta acccgcgtctg ctccctccctc ccgcagagac tggggcctgg actggacatg 4027  
 agagcccctt ggtgccacag agggctgtgt cttactagaa acaacgcaaa cctctccttc 4087  
 ctcagaatag tgatgtgttc gacgttttat caaaggcccc ctttctatgt tcatgttagt 4147  
 tttgtcctt ctgtgttttt ttctgaacca tatccatggt gctgactttt ccaaataaag 4207  
 gttttcactc ctcaaaaaaa aaaaaaaaag ggcggccgct ctagagtatc cctcgagggg 4267  
 cccaagctta cgcgtaccca gctttcttgt acaaagtggt ccctatagtg agtcgtatat 4327  
 aagctaggga cgtttcagcg acag 4351

<210> 11  
 <211> 1622  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (864) .. (1424)

<400> 11  
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 cgtggcatgg gtgggtcgtg agttgggagg ggcccacagg gcgtgcgcga cgcagcggcg 120  
 cggcgcgagg cgtaaggggc gtggcgccag tgggcgtggc gtggcgagc gcgaagggac 180  
 gcggtgcgca tgcgcgtgag ggcttccacg ggtgggtggg atcgaggcct gtcgggtcag 240  
 ggcggttcgc ggggtgctgtc agagctgggc cggggcccct aggcaggccc agacatgtcc 300  
 gtccttgtaa gttaaaagct tccatgggag ccttccttcc taatcaagat gcaaatagta 360  
 cggatttccg aacagacact aaaaatagct gtcattctcaa agaattccagt gcttgtgtca 420  
 cagtatgaga aagtagatgc tggggaacag cgtttaatga atgaggcatg caagccagcc 480  
 agtgatctct ttggaccttg cattctccat cagattggat cacctcccac cctgaggccc 540  
 cccaagactt tgaacagttc ttcagtcatc cttacagaaa gataccctct ccagacaaac 600  
 gcagtattta tatacgggcc attggatctc tatgaagcac cagaattatc agtgaagaat 660  
 atattaaatg gctcacgggc tactgtaaaag catatttcta tcgcttgaga gtaaaaactcc 720  
 tagaaccagt tcctgtttct gtaacaagat gttcctttag agtcaatgag aacacacaca 780

acctacaaat tcatgcaggg gacatcctga agttcttgaa aaagaagaaa cctgaagatg 840

ccttctgtgt tgtgggaata aca atg att gat ctt tac cca aga gac tcg 890  
Met Ile Asp Leu Tyr Pro Arg Asp Ser  
1 5

tgg aat ttt gtc ttt gga cag gcc tct ttg aca gat ggt gtg ggg ata 938  
Trp Asn Phe Val Phe Gly Gln Ala Ser Leu Thr Asp Gly Val Gly Ile  
10 15 20 25

ttc agc ttt gcc agg tat ggc agt gat ttt tat agc atg cac tat aaa 986  
Phe Ser Phe Ala Arg Tyr Gly Ser Asp Phe Tyr Ser Met His Tyr Lys  
30 35 40

ggc aaa gtg aag aag ctc aag aaa aca tct tca agt gac tat tca att 1034  
Gly Lys Val Lys Lys Leu Lys Lys Thr Ser Ser Ser Asp Tyr Ser Ile  
45 50 55

ttc gac aac tat tat att cca gaa ata act agt gtt tta cta ctt cga 1082  
Phe Asp Asn Tyr Tyr Ile Pro Glu Ile Thr Ser Val Leu Leu Leu Arg  
60 65 70

tcc tgt aag act tta acc cat gag atc gga cac ata ttt gga ctg cga 1130  
Ser Cys Lys Thr Leu Thr His Glu Ile Gly His Ile Phe Gly Leu Arg  
75 80 85

cac tgc cag tgg ctt gca tgc ctc atg caa ggc tcc aac cac ttg gaa 1178  
His Cys Gln Trp Leu Ala Cys Leu Met Gln Gly Ser Asn His Leu Glu  
90 95 100 105

gaa gct gac cgg cgc cct cta aac ctt tgc cct atc tgt ttg cac aag 1226  
Glu Ala Asp Arg Arg Pro Leu Asn Leu Cys Pro Ile Cys Leu His Lys  
110 115 120

ttg cag tgt gct gtt ggc ttc agc att gta gaa aga tac aaa gca ctg 1274  
Leu Gln Cys Ala Val Gly Phe Ser Ile Val Glu Arg Tyr Lys Ala Leu  
125 130 135

gtg agg tgg att gat gat gaa tct tct gac aca cct gga gca act cca 1322  
Val Arg Trp Ile Asp Asp Glu Ser Ser Asp Thr Pro Gly Ala Thr Pro  
140 145 150

gaa cac agt cac gag gat aat ggg aat tta ccg aaa ccc gtg gaa gcc 1370  
Glu His Ser His Glu Asp Asn Gly Asn Leu Pro Lys Pro Val Glu Ala  
155 160 165

ttt aag gaa tgg aaa gag tgg ata ata aaa tgc ctg gct gtt ctc caa 1418  
Phe Lys Glu Trp Lys Glu Trp Ile Ile Lys Cys Leu Ala Val Leu Gln  
170 175 180 185

aaa tga ggaccttcaa ataggagtga ttgaaataaa taactacttg catgttatgc 1474  
Lys \*

tttcatttgg gtggaatact tcattggaat aaactactga tcttgtgctg tgtcaaagta 1534

acagactaga accttctttc aagtacctga attgaaatga aactcatttt gaataataaa 1594



aactctagaa actctttaaaa aaaaaaaaa

1622

<210> 12  
<211> 882  
<212> DNA  
<213> Homo sapiens

<220>  
<221> CDS  
<222> (147)..(284)

<400> 12

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aaaaaaaaag gaaaaccac agccaacatt atcactagt gtaacaggga aaatgtcccc	120
tttgaccccc accccaagta cagaac atg caa gga cgc ctg ttc tca ctg cat	173
Met Gln Gly Arg Leu Phe Ser Leu His	
1 5	
gtc ttc tgt gtt gta ctg aag ctc cta gct ggt gca gtg agg caa gac	221
Val Phe Cys Val Val Leu Lys Leu Leu Ala Gly Ala Val Arg Gln Asp	
10 15 20 25	
aaa gaa agg aaa tat agg tgc act ggg aag gaa gaa gaa aca ctg cct	269
Lys Glu Arg Lys Tyr Arg Cys Thr Gly Lys Glu Glu Glu Thr Leu Pro	
30 35 40	
tta ttc ttt agg tga catgattgtg tgcttttaaa ataataaagg aatcaacaga	324
Leu Phe Phe Arg *	
45	
aaagttgctt aacctaataga atgagtttat caaagtcaca agatacaagg tcagtataca	384
aaaatcagtt ggatttctac atggtagaaa caactgtaca tggaaaaatg tttaatagt	444
taagatatgt acattggaaa ctatgaaaga gtgtaaaaaa taaagaagtg aaataaatgg	504
agaagatacc accttgatgg atggaagcct taaggtaaag atgctcattc tccccacact	564
gacctgtaca ttccccacag gcctaatacaa aacccccaca ggcttctgtg tagaaattga	624
catgctgata ctgaaattta tatgaaaatg caaagagtct ggaataacca aaataatttt	684
gtaaaagaac aaagaagact tctactacct gggtataaga cttctctgaa gcacagaagt	744
caaggcagtg tgggtggtggc ataagtaatg taaatcatcc aggtgtggtg gctcaagcca	804
gtcatccagc actttgggag gctgaggcag gagaatcgct agagcccagg agttggaaac	864
cagcctgggc agcatagc	882

<210> 13  
 <211> 442  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (58) .. (336)

<400> 13

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atg tac ata aag cca tct acc agg aaa tca ggc tac tca cct cag cag	105					
Met Tyr Ile Lys Pro Ser Thr Arg Lys Ser Gly Tyr Ser Pro Gln Gln						
1 5 10 15						

gta gct gtg atc cac tgc aaa gga cat caa aaa gaa aac acg gcc gtt	153
Val Ala Val Ile His Cys Lys Gly His Gln Lys Glu Asn Thr Ala Val	
20 25 30	

gcc cat agt aac cag aaa gct gat tca gca gct cag gtc act gcc aga	201
Ala His Ser Asn Gln Lys Ala Asp Ser Ala Ala Gln Val Thr Ala Arg	
35 40 45	

ctt tca gtc acg cct cca aac ttg ctg ccc aca gtc tcc ttt cca cag	249
Leu Ser Val Thr Pro Pro Asn Leu Leu Pro Thr Val Ser Phe Pro Gln	
50 55 60	

cca gat ctg cct gac aat ccc gta tac tca aca aca aca gaa aaa ctg	297
Pro Asp Leu Pro Asp Asn Pro Val Tyr Ser Thr Thr Thr Glu Lys Leu	
65 70 75 80	

gct tca gat ctc aga gcc aat aaa aat cag gaa agt tag tagattcttc	346
Ala Ser Asp Leu Arg Ala Asn Lys Asn Gln Glu Ser *	
85 90	

ctgactctgg aatcttcata ccctgaactt aaaccagtta cctacagtct accacccatt	406
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taagaagagc aaagttacct cagctcctcc ggaggg	442
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<210> 14  
 <211> 2058  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (173) .. (1909)

<400> 14

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tctgacttgc actggctggg ggtccgcttc cggggagagc gccagtgcc cacagggtggc	120
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aggagcctgt ccagggactc tgcattgctg ctgcagagag ggatgtactc gg	atg Met 1	175
tgg ccc aga gct gcc cac ctc cca ggt acc cgc tgg cat ggc cgg ccc Trp Pro Arg Ala Ala His Leu Pro Gly Thr Arg Trp His Gly Arg Pro		223
5 10 15		
aca ggg cat ccc ccc cca ccc cca atg agc ctg ccc gcc tca gcc atg Thr Gly His Pro Pro Pro Pro Pro Met Ser Leu Pro Ala Ser Ala Met		271
20 25 30		
cct gtt gag ggg gtg ggg ggg gat gcc ctg tgg gcc ggc cat gcc agc Pro Val Glu Gly Val Gly Gly Asp Ala Leu Trp Ala Gly His Ala Ser		319
35 40 45		
ggg tac ctg gga ggt ggc cag ctc tgg gcc aca tcc gag tac atc cct Gly Tyr Leu Gly Gly Gly Gln Leu Trp Ala Thr Ser Glu Tyr Ile Pro		367
50 55 60 65		
ctc tgc agc agc aat gca gag tcc ctg gac agg ctc ctg cca cct gtg Leu Cys Ser Ser Asn Ala Glu Ser Leu Asp Arg Leu Leu Pro Pro Val		415
70 75 80		
ggc act ggg cgc tct ccc cgg aag cgg acc acc agc cag tgc aag tca Gly Thr Gly Arg Ser Pro Arg Lys Arg Thr Thr Ser Gln Cys Lys Ser		463
85 90 95		
gag cct ccc ctg ctg cgt aca agc aag cgt acc atc tac acc gcc ggg Glu Pro Pro Leu Leu Arg Thr Ser Lys Arg Thr Ile Tyr Thr Ala Gly		511
100 105 110		
cgg ccg ccc tgg tac aat gaa cac ggc acg caa tcc aaa gag gcc ttc Arg Pro Pro Trp Tyr Asn Glu His Gly Thr Gln Ser Lys Glu Ala Phe		559
115 120 125		
gcc atc ggc ttg gga ggc ggc agt gcc tct ggg aag acc act gtg gcc Ala Ile Gly Leu Gly Gly Gly Ser Ala Ser Gly Lys Thr Thr Val Ala		607
130 135 140 145		
aga atg atc atc gag gcc ctg gat gtg ccc tgg gtg gtc ttg ctg tcc Arg Met Ile Ile Glu Ala Leu Asp Val Pro Trp Val Val Leu Leu Ser		655
150 155 160		
atg gac tcc ttc tac aag gtg ctg act gag cag cag cag gaa cag gcc Met Asp Ser Phe Tyr Lys Val Leu Thr Glu Gln Gln Gln Glu Gln Ala		703
165 170 175		
gca cac aac aac ttc aac ttc gac cac cca gat gcc ttt gac ttc gac Ala His Asn Asn Phe Asn Phe Asp His Pro Asp Ala Phe Asp Phe Asp		751
180 185 190		
ctc atc att tcc acc ctc aag aag ctg aag cag ggg aag agt gtc aag Leu Ile Ile Ser Thr Leu Lys Lys Leu Lys Gln Gly Lys Ser Val Lys		799
195 200 205		

gtg ccc att tat gac ttc acc acg cac agc cgg aag aag gac tgg aaa	847
Val Pro Ile Tyr Asp Phe Thr Thr His Ser Arg Lys Lys Asp Trp Lys	
210 215 220 225	
aca ctg tat ggt gca aac gtc atc atc ttt gag ggc atc atg gcc ttt	895
Thr Leu Tyr Gly Ala Asn Val Ile Ile Phe Glu Gly Ile Met Ala Phe	
230 235 240	
gct gac aag aca ctg ttg gag ctc ctg gac atg aag atc ttt gtg gac	943
Ala Asp Lys Thr Leu Leu Glu Leu Leu Asp Met Lys Ile Phe Val Asp	
245 250 255	
aca gac tcc gac atc cgc ctg gta cgg cgg ctg cgc cgg gac atc agt	991
Thr Asp Ser Asp Ile Arg Leu Val Arg Arg Leu Arg Arg Asp Ile Ser	
260 265 270	
gag cgc ggc cgg gac atc gag ggt gtc atc aag cag tac aac aag ttt	1039
Glu Arg Gly Arg Asp Ile Glu Gly Val Ile Lys Gln Tyr Asn Lys Phe	
275 280 285	
gtc aag ccc tcc ttc gac cag tac atc cag ccc acc atg cgc ctg gca	1087
Val Lys Pro Ser Phe Asp Gln Tyr Ile Gln Pro Thr Met Arg Leu Ala	
290 295 300 305	
gac atc gtg gtc ccc aga ggg agc ggc aac acg gtg gcc atc gac ctg	1135
Asp Ile Val Val Pro Arg Gly Ser Gly Asn Thr Val Ala Ile Asp Leu	
310 315 320	
att gtg cag cac gtg cac agc cag ctg gag gag cgt gaa ctc agc gtc	1183
Ile Val Gln His Val His Ser Gln Leu Glu Glu Arg Glu Leu Ser Val	
325 330 335	
agg gct gcg ctg gcc tcg gca cac cag tgc cac ccg ctg ccc cgg acg	1231
Arg Ala Ala Leu Ala Ser Ala His Gln Cys His Pro Leu Pro Arg Thr	
340 345 350	
ctg agc gtc ctg aag agc acg ccg cag gta cgg ggc atg cac acc atc	1279
Leu Ser Val Leu Lys Ser Thr Pro Gln Val Arg Gly Met His Thr Ile	
355 360 365	
atc agg gac aag gag acc agt cgc gac gag ttc atc ttc tac tcc aag	1327
Ile Arg Asp Lys Glu Thr Ser Arg Asp Glu Phe Ile Phe Tyr Ser Lys	
370 375 380 385	
aga ctg atg cgg ctg ctc atc gag cac gcg ctc tcc ttc ctg ccc ttt	1375
Arg Leu Met Arg Leu Leu Ile Glu His Ala Leu Ser Phe Leu Pro Phe	
390 395 400	
cag gac tgc gtc gta cag acc ccg cag ggg cag gac tat gcg ggc aag	1423
Gln Asp Cys Val Val Gln Thr Pro Gln Gly Gln Asp Tyr Ala Gly Lys	
405 410 415	
tgc tat gcg ggg aag cag atc acc ggt gtg tcc att ctg cgc gcc ggt	1471
Cys Tyr Ala Gly Lys Gln Ile Thr Gly Val Ser Ile Leu Arg Ala Gly	
420 425 430	
gaa acc atg gag ccc gcg ctg cgc gct gtg tgc aaa gac gtg cgc atc	1519

Glu Thr Met Glu Pro Ala Leu Arg Ala Val Cys Lys Asp Val Arg Ile  
 435 440 445

ggc acc atc ctc atc cag acc aac cag ctt acc ggg gag ccc gag ctc 1567  
 Gly Thr Ile Leu Ile Gln Thr Asn Gln Leu Thr Gly Glu Pro Glu Leu  
 450 455 460 465

cac tac ctg agg ctg ccc aag gac atc agc gat gac cac gtg atc ctc 1615  
 His Tyr Leu Arg Leu Pro Lys Asp Ile Ser Asp Asp His Val Ile Leu  
 470 475 480

atg gac tgc acc gtg tcc acg ggc gcg gcg gcc atg atg gca gtg cgc 1663  
 Met Asp Cys Thr Val Ser Thr Gly Ala Ala Ala Met Met Ala Val Arg  
 485 490 495

gtg ctc ctg gac cac gac gtg cct gag gac aag atc ttt ttg ctg tcg 1711  
 Val Leu Leu Asp His Asp Val Pro Glu Asp Lys Ile Phe Leu Leu Ser  
 500 505 510

ctg ctc atg gca gag atg ggc gtg cac tca gtg gcc tat gca ttt ccg 1759  
 Leu Leu Met Ala Glu Met Gly Val His Ser Val Ala Tyr Ala Phe Pro  
 515 520 525

cga gtg aga atc atc acc acg gcg gtg gac aag cgg gtc aat gac ctt 1807  
 Arg Val Arg Ile Ile Thr Thr Ala Val Asp Lys Arg Val Asn Asp Leu  
 530 535 540 545

ttc cgc atc atc cca ggc att ggg aac ttt ggc gac cgc tac ttt ggg 1855  
 Phe Arg Ile Ile Pro Gly Ile Gly Asn Phe Gly Asp Arg Tyr Phe Gly  
 550 555 560

aca gac gcg gtc ccc gat ggc agt gac gag gag gaa gtg gcc tac acg 1903  
 Thr Asp Ala Val Pro Asp Gly Ser Asp Glu Glu Glu Val Ala Tyr Thr  
 565 570 575

ggt tag ctgcccagtg agccatcccg tccccaccac cctcctcctg cctcctgacc 1959  
 Gly \*

caggactgct gaatacaaag atgttaatgtt ttaaaatggt actagtataa tttattctat 2019

gcattttata aaataaataa agcttttagaa aaaaaaaaaa 2058

<210> 15  
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 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (545) .. (1672)

<400> 15  
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cgggtgcgcgc cccgctccgg gacctgccgc caccgccgcc ccgccctcgg cggcaccac 120  
 acccaggcgc gcccgcgcgc gcgccggcc ccgtccctgc ctggaagcac agctgaagat 180  
 ggcgagcccg gcgcctccgg agcacgccga ggagggatgc ccggctcctg ccgccgagga 240  
 gcaggcgccg ccgtcgcgc caccgccccca ggcattcccc gcagagcggc agcagcagga 300  
 ggaggaagcg caggaagctg gggcggcgga gggcgcgggg ttgcaggtgg aggaggccgc 360  
 gggccggggcg gcggccgcgg taacctggct gctcggggag ccggtgctgt ggctgggctg 420  
 ccgcgccgac gagctgctga gctggaagag gccgctgcgg agcctgctcg gcttcgtcgc 480  
 tgccaacctg ctgtttctggt tccttgcat gactccatgg agagtatatc acctgatttc 540  
 cgtc atg ata ctt ggg cgt gtt att atg caa ata ata aag gat atg gtt 589  
 Met Ile Leu Gly Arg Val Ile Met Gln Ile Ile Lys Asp Met Val  
 1 5 10 15  
 ttg tct aga aca aga ggt gca cag ttg tgg aga agc ctc agt gaa agc 637  
 Leu Ser Arg Thr Arg Gly Ala Gln Leu Trp Arg Ser Leu Ser Glu Ser  
 20 25 30  
 tgg gaa gtt atc aat tcc aaa cca gat gaa aga ccc agg ctc agc cac 685  
 Trp Glu Val Ile Asn Ser Lys Pro Asp Glu Arg Pro Arg Leu Ser His  
 35 40 45  
 tgt att gca gaa tca tgg atg aat ttc agc ata ttt ctt caa gaa atg 733  
 Cys Ile Ala Glu Ser Trp Met Asn Phe Ser Ile Phe Leu Gln Glu Met  
 50 55 60  
 tct ctt ttt aaa cag cag agc cct ggc aag ttt tgt ctc ctg gtc tgt 781  
 Ser Leu Phe Lys Gln Gln Ser Pro Gly Lys Phe Cys Leu Leu Val Cys  
 65 70 75  
 agt gtg tgc aca ttt ttt acg atc ttg gga agt tac att cct ggg gtt 829  
 Ser Val Cys Thr Phe Phe Thr Ile Leu Gly Ser Tyr Ile Pro Gly Val  
 80 85 90 95  
 ata ctc agc tat cta ctg tta ctg tgt gca ttt ttg tgt cca ttg ttt 877  
 Ile Leu Ser Tyr Leu Leu Leu Leu Cys Ala Phe Leu Cys Pro Leu Phe  
 100 105 110  
 aaa tgt aat gat att gga caa aaa att tac agc aaa att aag tca gtt 925  
 Lys Cys Asn Asp Ile Gly Gln Lys Ile Tyr Ser Lys Ile Lys Ser Val  
 115 120 125  
 ctg ctg aaa ctg gat ttt gga att gga gaa tat att aat cag aag aaa 973  
 Leu Leu Lys Leu Asp Phe Gly Ile Gly Glu Tyr Ile Asn Gln Lys Lys  
 130 135 140  
 cgt gag aga tct gaa gca gat aaa gaa aaa agt cac aaa gat gac agt 1021  
 Arg Glu Arg Ser Glu Ala Asp Lys Glu Lys Ser His Lys Asp Asp Ser  
 145 150 155

gaa tta gac ttt tca gct ctt tgt cct aag att agc ctc acg gtt gct	1069
Glu Leu Asp Phe Ser Ala Leu Cys Pro Lys Ile Ser Leu Thr Val Ala	
160 165 170 175	
gcc aaa gag tta tct gtg tct gac aca gac gtc tca gag gta tcc tgg	1117
Ala Lys Glu Leu Ser Val Ser Asp Thr Asp Val Ser Glu Val Ser Trp	
180 185 190	
act gat aat ggg acc ttc aac ctt tca gaa gga tac act cca cag aca	1165
Thr Asp Asn Gly Thr Phe Asn Leu Ser Glu Gly Tyr Thr Pro Gln Thr	
195 200 205	
gac act tct gat gat ctt gac cga ccc agt gag gaa gtt ttc tct aga	1213
Asp Thr Ser Asp Asp Leu Asp Arg Pro Ser Glu Glu Val Phe Ser Arg	
210 215 220	
gat ctt tca gat ttt cca tct cta gaa aat ggc atg gga aca aat gat	1261
Asp Leu Ser Asp Phe Pro Ser Leu Glu Asn Gly Met Gly Thr Asn Asp	
225 230 235	
gaa gat gaa tta agc ctt ggt ttg ccc act gag ctc aag aga aag aag	1309
Glu Asp Glu Leu Ser Leu Gly Leu Pro Thr Glu Leu Lys Arg Lys Lys	
240 245 250 255	
gaa cag ttg gac agt ggt cac aga cca agc aaa gag acg caa tca gca	1357
Glu Gln Leu Asp Ser Gly His Arg Pro Ser Lys Glu Thr Gln Ser Ala	
260 265 270	
gct ggt ctc acc ctt cct ctg aac agt gac caa acc ttt cac ctg atg	1405
Ala Gly Leu Thr Leu Pro Leu Asn Ser Asp Gln Thr Phe His Leu Met	
275 280 285	
agc aac ctg gct ggg gat gtt atc aca gct gca gtg act gca gct atc	1453
Ser Asn Leu Ala Gly Asp Val Ile Thr Ala Ala Val Thr Ala Ala Ile	
290 295 300	
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Lys Asp Gln Leu Glu Gly Val Gln Gln Ala Leu Ser Gln Ala Ala Pro	
305 310 315	
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Ile Pro Glu Glu Asp Thr Asp Thr Glu Glu Gly Asp Asp Phe Glu Leu	
320 325 330 335	
ctt gac cag tca gag ctg gat caa att gag agt gaa ttg gga ctt aca	1597
Leu Asp Gln Ser Glu Leu Asp Gln Ile Glu Ser Glu Leu Gly Leu Thr	
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caa gac cag gaa gca gaa gca cag caa aat aag aag tct tca ggt ttc	1645
Gln Asp Gln Glu Ala Glu Ala Gln Gln Asn Lys Lys Ser Ser Gly Phe	
355 360 365	
ctt tca aat ctg ctg gga ggc cat taa tctag gaatcagctt gcaacagagc	1697
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acgcgtccgg tgcaccgcgt tctcgcacgc gtc atg gcg gtc ctc gga gta cag      174
                               Met Ala Val Leu Gly Val Gln
                               1                               5

ctg gtg gtg acc ctg ctc act gcc acc ctc atg cac agg ctg gcg cca      222
Leu Val Val Thr Leu Leu Thr Ala Thr Leu Met His Arg Leu Ala Pro
                               10                               15                               20

cac tgc tcc ttc gcg cgc tgg ctg ctc tgt aac ggc agt ttg ttc cga      270
His Cys Ser Phe Ala Arg Trp Leu Leu Cys Asn Gly Ser Leu Phe Arg
                               25                               30                               35

tac aag cac ccg tct gag gag gag ctt cgg gcc ctg gcg ggg aag ccg      318
Tyr Lys His Pro Ser Glu Glu Glu Leu Arg Ala Leu Ala Gly Lys Pro
                               40                               45                               50                               55

agg ccc aga ggc agg aaa gag cgg tgg gcc aat ggc ctt agt gag gag      366
Arg Pro Arg Gly Arg Lys Glu Arg Trp Ala Asn Gly Leu Ser Glu Glu
                               60                               65                               70

aag cca ctg tct gtg ccc cga gat gcc ccg ttc cag ctg gag acc tgc      414
Lys Pro Leu Ser Val Pro Arg Asp Ala Pro Phe Gln Leu Glu Thr Cys
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ccc ctc acg acc gtg gat gcc ctg gtc ctg cgc ttc ttc ctg gag tac      462
Pro Leu Thr Thr Val Asp Ala Leu Val Leu Arg Phe Phe Leu Glu Tyr
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cag tgg ttt gtg gac ttt gct gtg tac tcg ggc ggc gtg tac ctc ttc      510
Gln Trp Phe Val Asp Phe Ala Val Tyr Ser Gly Gly Val Tyr Leu Phe
                               105                               110                               115

aca gag gcc tac tac tac atg ctg gga cca gcc aag gag act aac att      558
Thr Glu Ala Tyr Tyr Tyr Met Leu Gly Pro Ala Lys Glu Thr Asn Ile
                               120                               125                               130                               135

gct gtg ttc tgg tgc ctg ctc acg gtg acc ttc tcc atc aag atg ttc      606
Ala Val Phe Trp Cys Leu Leu Thr Val Thr Phe Ser Ile Lys Met Phe
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tgg gac tgg gcg ctt cct gtg gcc aag ctg gct atc cgc gtg gga ctg Trp Asp Trp Ala Leu Pro Val Ala Lys Leu Ala Ile Arg Val Gly Leu 220 225 230	846
gca gtg gtg ggc tct gtg ctg ggt gcc ttc ctc acc ttc cca ggc ctg Ala Val Val Gly Ser Val Leu Gly Ala Phe Leu Thr Phe Pro Gly Leu 235 240 245	894
cgg ctg gcc cag acc cac cgg gac gca ctg acc atg tgc gag gac aga Arg Leu Ala Gln Thr His Arg Asp Ala Leu Thr Met Ser Glu Asp Arg 250 255 260	942
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gac tct ggg cgc ctc tgg ttg ctg gtg gtg ctg tgc ctg ctg cgg ctg Asp Ser Gly Arg Leu Trp Leu Leu Val Val Leu Cys Leu Leu Arg Leu 315 320 325	1134
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cgg gtg gag cag ctg cga agg gag gct ggc cgc atc gaa gcc cgt gaa Arg Val Glu Gln Leu Arg Arg Glu Ala Gly Arg Ile Glu Ala Arg Glu 345 350 355	1230
atc cag cag agg gtg gtc cga gtc tac tgc tat gtg acc gtg gtg agc Ile Gln Gln Arg Val Val Arg Val Tyr Cys Tyr Val Thr Val Val Ser 360 365 370 375	1278

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Leu Gln Tyr Leu Thr Pro Leu Ile Leu Thr Leu Asn Cys Thr Leu Leu	
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ctc aag acg ctg gga ggc tat tcc tgg ggc ctg ggc cca gct cct cta	1374
Leu Lys Thr Leu Gly Gly Tyr Ser Trp Gly Leu Gly Pro Ala Pro Leu	
395 400 405	
cta tcc ccc gac cca tcc tca gcc agc gct gcc ccc atc ggc tct ggg	1422
Leu Ser Pro Asp Pro Ser Ser Ala Ser Ala Ala Pro Ile Gly Ser Gly	
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425 430 435	
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Gly Leu Leu Thr Pro Leu Phe Leu Arg Gly Val Leu Ala Tyr Leu Ile	
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Trp Trp Thr Ala Ala Cys Gln Leu Leu Ala Ser Leu Phe Gly Leu Tyr	
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Phe His Gln His Leu Ala Gly Ser *	
475 480	
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Met Lys Ala Ala Val Leu Thr Leu Ala Val Leu Phe Leu Thr Gly Ser	
1 5 10 15	

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gat cga gtg aag gac ctg gcc act gtg tac gtg gat gtg ctc aaa gac Asp Arg Val Lys Asp Leu Ala Thr Val Tyr Val Asp Val Leu Lys Asp 35 40 45	204
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ctc ggc cct gtg acc cag gag ttc tgg gat aac ctg gaa aag gag aca Leu Gly Pro Val Thr Gln Glu Phe Trp Asp Asn Leu Glu Lys Glu Thr 65 70 75 80	300
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Leu Asn Thr Gln \*

245

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gcggacagct ggcagagaga gaagttggct agc atg gaa tca cca gag gag cct 174  
Met Glu Ser Pro Glu Glu Pro  
1 5

gga gca tcc atg gat gag aac tac ttt gtg aac tac act ttc aaa gat 222  
Gly Ala Ser Met Asp Glu Asn Tyr Phe Val Asn Tyr Thr Phe Lys Asp  
10 15 20

cgg tca cat tca ggc cgt gtg gct caa ggc atc atg aaa ctg tgt cta 270  
Arg Ser His Ser Gly Arg Val Ala Gln Gly Ile Met Lys Leu Cys Leu  
25 30 35

gag gag gag ctc ttt gct gat gtc acc att tcg gtg gaa ggc cgg gag 318  
Glu Glu Glu Leu Phe Ala Asp Val Thr Ile Ser Val Glu Gly Arg Glu  
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Phe Gln Leu His Arg Leu Val Leu Ser Ala Gln Ser Cys Phe Phe Arg  
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75 80 85

ctg cag gat gtc agc gag tct gtt ttc cag ctc ctg gtt gat tat atc 462  
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90 95 100

tac cat ggg act gtg aaa ctt cga gct gag gag ttg cag gaa att tat 510  
Tyr His Gly Thr Val Lys Leu Arg Ala Glu Glu Leu Gln Glu Ile Tyr  
105 110 115

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Arg Phe Leu Ala Arg Thr Val Gln Val Gly Asn Cys Leu Gln Val Met	
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tgg ctg gca gat cgg cac agt gat cct gag ctc tat acg gct gcc aag	654
Trp Leu Ala Asp Arg His Ser Asp Pro Glu Leu Tyr Thr Ala Ala Lys	
155 160 165	
cac tgt gcc aag acc cac ctg gcc cag ctg cag aat aca gag gaa ttt	702
His Cys Ala Lys Thr His Leu Ala Gln Leu Gln Asn Thr Glu Glu Phe	
170 175 180	
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Leu His Leu Pro His Arg Leu Leu Thr Asp Ile Ile Ser Asp Gly Val	
185 190 195	
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Pro Cys Ser Gln Asn Pro Thr Glu Ala Ile Glu Ala Trp Ile Asn Phe	
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Asn Lys Glu Glu Arg Glu Ala Phe Ala Glu Ser Leu Arg Thr Ser Leu	
220 225 230	
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Lys Glu Ile Gly Glu Asn Val His Ile Tyr Leu Ile Gly Lys Glu Ser	
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Ser Arg Thr His Ser Leu Ala Val Ser Leu His Cys Ala Glu Asp Asp	
250 255 260	
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Ser Ile Ser Val Ser Gly Gln Asn Ser Leu Cys His Gln Ile Thr Ala	
265 270 275	
gcc tgc aag cat ggt gga gac ttg tat gtg gtg gga ggg tcc atc cca	1038
Ala Cys Lys His Gly Gly Asp Leu Tyr Val Val Gly Gly Ser Ile Pro	
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ctc tcc aac gca gtc att tat tat cgc gta ggt gat aat gtg tgg aca	1230
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 Asp Lys Cys His Val Lys Pro Tyr Val Leu Pro Phe Ala Gly Arg Met 420  
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 His Ala Ala Val His Lys Asp Leu Val Phe Ile Val Ala Glu Gly Asp 435  
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 Ser Leu Val Cys Tyr Asn Pro Leu Leu Asp Ser Phe Thr Arg Leu Cys 455  
 440 445 450

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 Leu Pro Glu Ala Trp Ser Ser Ala Pro Ser Leu Trp Lys Ile Ala Ser 470  
 460 465

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 Cys Asn Gly Ser Ile Tyr Val Phe Arg Asp Arg Tyr Lys Lys Gly Asp 485  
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 Ala Asn Thr Tyr Lys Leu Asp Pro Ala Thr Ser Ala Val Thr Val Thr 500  
 490 495

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 Arg Gly Ile Lys Val Leu Leu Thr Asn Leu Gln Phe Val Leu Ala \* 515  
 505 510

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Met Lys Ala  
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Leu Met Asn Glu Lys Ala Gln Ala Ala Leu Val Glu Phe Val Glu Asp  
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Val Asn His Ala Ala Ile Pro Arg Glu Ile Pro Arg Lys Asp Gly Val  
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tgg agg gtt ctg tgg aag gac cgt gcg cag gac acg agg gtc ctg agg 258  
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40 45 50  
cag atg aca cgc ctg ctg ctg gat gac ggg ccc acg cag gcc gcg gag 306  
Gln Met Thr Arg Leu Leu Leu Asp Asp Gly Pro Thr Gln Ala Ala Glu  
55 60 65  
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Ala Gly Thr Pro Gly Glu Ala Pro Thr Pro Pro Ala Ser Glu Thr Gln  
70 75 80  
gcc cag gat tct ggt gag gta aca ggg cat gct ggc tcg ctt ctt ggg 402  
Ala Gln Asp Ser Gly Glu Val Thr Gly His Ala Gly Ser Leu Leu Gly  
85 90 95  
gca ccc agg aac cca agg agg ggc cgt cgg ggt cgc aga aac aga acc 450  
Ala Pro Arg Asn Pro Arg Arg Gly Arg Arg Gly Arg Arg Asn Arg Thr  
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Arg Arg Asn Arg Leu Thr Gln Lys Gly Lys Lys Arg Ser Arg Gly Gly  
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cgg ccg tct gct ccc gcg agg agt gag gcc gag gac tct tcc gac gag 546  
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 135 140 145

agc ctg ggc atc gtg atc gag gag atc gac cag ggc gac ctg agc gga 594  
 Ser Leu Gly Ile Val Ile Glu Glu Ile Asp Gln Gly Asp Leu Ser Gly  
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gaa gag gac cag agc gcg ctg tac gcc acg ctg cag gcc gct gcc agg 642  
 Glu Glu Asp Gln Ser Ala Leu Tyr Ala Thr Leu Gln Ala Ala Arg  
 165 170 175

gag ctg gtt agg cag tgg gcg ccc tgc aac tcc gag ggg gaa gaa gac 690  
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gag agc gac tcg cag gaa agt ggg gac caa gaa aca gag gag ttg gat 930  
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 260 265 270 275

aat cct gag ttc gtg gcc att gtg gcc tat acc gac ccg tcg gac ccc 978  
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 Ser Val Met Ser Lys Asp Thr Asn Gly Thr Arg Val Lys Val Glu Glu  
 325 330 335

gcg ggc cgc gag gtg gac gcc gtg gtc ctg cgc aag gcc ggg gat gac 1170  
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Gly Asp Leu Arg Glu Cys Ile Ser Thr Leu Ala Gln Pro Asp Leu Pro	360	365	370	
ccc cag gcg aag aag gct ggg cgt ggc ctc ttc ggg ggc tgg agc gag				1266
Pro Gln Ala Lys Lys Ala Gly Arg Gly Leu Phe Gly Gly Trp Ser Glu	375	380	385	
cac cgt gag gac gaa ggg ggt ctt ctg gag ctg gtg gcg ctc ctg gct				1314
His Arg Glu Asp Glu Gly Gly Leu Leu Glu Leu Val Ala Leu Leu Ala	390	395	400	
gcc cag gac atg gcg gag gtg atg aag gag gaa aaa gaa aac gcc tgg				1362
Ala Gln Asp Met Ala Glu Val Met Lys Glu Glu Lys Glu Asn Ala Trp	405	410	415	
gaa ggc ggg aag tac aaa tac ccc aaa ggc aaa ctg ggg gag gta ttg				1410
Glu Gly Gly Lys Tyr Lys Tyr Pro Lys Gly Lys Leu Gly Glu Val Leu	420	425	430	435
gcg ctc ctg gcc gcc cgg gag aac atg ggg tcc aac gag ggg tcg gag				1458
Ala Leu Leu Ala Ala Arg Glu Asn Met Gly Ser Asn Glu Gly Ser Glu	440	445	450	
gag gct tcg gac gaa cag tcc gag gag gag tcg gag gac acc gag agc				1506
Glu Ala Ser Asp Glu Gln Ser Glu Glu Glu Ser Glu Asp Thr Glu Ser	455	460	465	
gag gcg tcg gag ccg gag gac agg gca tcc agg aag ccc cgg gcc aag				1554
Glu Ala Ser Glu Pro Glu Asp Arg Ala Ser Arg Lys Pro Arg Ala Lys	470	475	480	
agg gcg cgc acg gcc ccc agg ggc ctg act ccg gcc ggc gcg cct ccc				1602
Arg Ala Arg Thr Ala Pro Arg Gly Leu Thr Pro Ala Gly Ala Pro Pro	485	490	495	
acc gct tcc ggg gcc cgc aaa acc cgc gcg ggc ggc cga ggc cga ggc				1650
Thr Ala Ser Gly Ala Arg Lys Thr Arg Ala Gly Gly Arg Gly Arg Gly	500	505	510	515
cga ggc cgg ggc gtc act ccc gag aag aaa gcc ggg agc cgg ggc tcg				1698
Arg Gly Arg Gly Val Thr Pro Glu Lys Lys Ala Gly Ser Arg Gly Ser	520	525	530	
gcc cag gac gac gcc gca gga agc agg aag aag aag ggg agc gcg ggc				1746
Ala Gln Asp Asp Ala Ala Gly Ser Arg Lys Lys Lys Gly Ser Ala Gly	535	540	545	
tcc ggg gcc cat gcc agg gca ggc gag gcc aag ggc cag gcg ccc act				1794
Ser Gly Ala His Ala Arg Ala Gly Glu Ala Lys Gly Gln Ala Pro Thr	550	555	560	
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Gly Ser Lys Ala Ala Arg Gly Lys Lys Ala Arg Arg Gly Arg Arg Leu	565	570	575	

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Ser Gly Gly Ser Ser Gly Gly Ala Gly Gly Gly Ala Phe Gly Ala
5 10 15

ggc ccg ggc ccc gag cgc ccg aac agc acg gcc gac aag aac ggg gcc 151
Gly Pro Gly Pro Glu Arg Pro Asn Ser Thr Ala Asp Lys Asn Gly Ala
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ctc aag tgc acc ttc tcg gca ccc agc cac agc acc agc ctc ctg cag 199
Leu Lys Cys Thr Phe Ser Ala Pro Ser His Ser Thr Ser Leu Leu Gln
40 45 50

ggc ctg gcc acc ctc cgc gct cag ggc cag ctc ctc gat gtt gtg ctg 247
Gly Leu Ala Thr Leu Arg Ala Gln Gly Gln Leu Leu Asp Val Val Leu
55 60 65

act att aac aga gag gcc ttt cct gca cac aag gtc gtc ctg gct gcc 295
Thr Ile Asn Arg Glu Ala Phe Pro Ala His Lys Val Val Leu Ala Ala
70 75 80

tgc agc gac tac ttc agg gcc atg ttc acc ggc ggc atg cgg gag gca 343
Cys Ser Asp Tyr Phe Arg Ala Met Phe Thr Gly Gly Met Arg Glu Ala
85 90 95

agc cag gac gtc atc gag ctg aag ggc gtg tcg gcc cgt ggc ctg cgg 391
Ser Gln Asp Val Ile Glu Leu Lys Gly Val Ser Ala Arg Gly Leu Arg
100 105 110 115

cac atc atc gac ttc gcc tac agc gcc gag gtg aca ctg gac ctg gac 439
His Ile Ile Asp Phe Ala Tyr Ser Ala Glu Val Thr Leu Asp Leu Asp
120 125 130

tgc gtg cag gac gtg ctg ggc gcg gcc gtg ttc ttg cag atg ctg ccc 487
Cys Val Gln Asp Val Leu Gly Ala Ala Val Phe Leu Gln Met Leu Pro

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acc tgc ctc aac atc ggc cag atg gcc acc acc ttc agc ctg gcc tcg Thr Cys Leu Asn Ile Gly Gln Met Ala Thr Thr Phe Ser Leu Ala Ser 165 170 175			583
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gcc gag gag gag gat ttc ctg cgc ctg cca ctg gag cgc ctg gtc ttc Ala Glu Glu Glu Asp Phe Leu Arg Leu Pro Leu Glu Arg Leu Val Phe 200 205 210			679
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gag ctg gtg gac agc gtg cag acg ctg gac atc atg gtg gag gac gtg Glu Leu Val Asp Ser Val Gln Thr Leu Asp Ile Met Val Glu Asp Val 260 265 270 275			871
ctg tgc cgc cag tat ctg ctg gag gcc ttc aac tac cag gtg ctg ccc Leu Cys Arg Gln Tyr Leu Leu Glu Ala Phe Asn Tyr Gln Val Leu Pro 280 285 290			919
ttc cgg cag cac gag atg cag tct ccg cgc acc gcc gtg cgc tcg gat Phe Arg Gln His Glu Met Gln Ser Pro Arg Thr Ala Val Arg Ser Asp 295 300 305			967
gtg ccc tcg ctc gtc acc ttc ggc ggc acg ccc tac acc gac agc gac Val Pro Ser Leu Val Thr Phe Gly Gly Thr Pro Tyr Thr Asp Ser Asp 310 315 320			1015
cgc tcg gtc agc agc aag gtc tac cag ctg cct gag ccg gga gcc cgc Arg Ser Val Ser Ser Lys Val Tyr Gln Leu Pro Glu Pro Gly Ala Arg 325 330 335			1063
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cgc atg gac cac gcg gac cgc tgc ttc gac gtg ctg gct gtg gag tac Arg Met Asp His Ala Asp Arg Cys Phe Asp Val Leu Ala Val Glu Tyr 520 525 530	1639
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 Arg Lys Leu Phe Val Cys Asp Val Leu Pro Leu Ile Ile Asn Asn His  
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 Asp Val Arg Leu Pro Ala Asn Leu Leu Tyr Lys Tyr Leu Asn Lys Ala  
 190 195 200

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 Ala Glu Phe Tyr Ile Asn Tyr Val Thr Arg Ser Thr Gln Ile Glu Asn  
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 Gln His Gln Gly Ala Gln Asp Thr Ser Asp Leu Met Ser Pro Ser Lys  
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380

385

390

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575 580 585	
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Val Gln Arg Ala Arg Glu Leu Val Pro Gln Asp Leu Trp Ala Ala Lys	
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Ser Gln Asp Lys Gln Thr Gln Phe Leu Arg Ser Leu Phe Glu Thr Leu	
95 100 105	
cct ggt cgg gtc cag tgt gaa atg tta cta aag gtc acg gaa caa tgc	508
Pro Gly Arg Val Gln Cys Glu Met Leu Leu Lys Val Thr Glu Gln Cys	
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Phe Asn Thr Leu Glu Arg Ser Glu Met Leu Leu Leu Leu Arg Arg	
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Phe Pro Glu Thr Val Val Gln His Gly Val Gly Leu Gly Glu Ala Leu	
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Leu Glu Ala Glu Thr Ile Glu Glu Gln Glu Ser Pro Val Asn Cys Phe	
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Arg Lys Leu Phe Val Cys Asp Val Leu Pro Leu Ile Ile Asn Asn His	
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gat gtt cga tta cct gcc aat tta ttg tat aag tac ttg aac aaa gca	748
Asp Val Arg Leu Pro Ala Asn Leu Leu Tyr Lys Tyr Leu Asn Lys Ala	
190 195 200	
gct gaa ttt tat atc aat tat gtc act agg tct act caa ata gaa aat	796
Ala Glu Phe Tyr Ile Asn Tyr Val Thr Arg Ser Thr Gln Ile Glu Asn	
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cag cat caa ggc gcc cag gat aca tct gat tta atg tca cct agc aaa	844
Gln His Gln Gly Ala Gln Asp Thr Ser Asp Leu Met Ser Pro Ser Lys	
220 225 230	
cgt agc tct cag aag tac ata ata gaa ggg ctg acg gaa aaa tca tcc	892
Arg Ser Ser Gln Lys Tyr Ile Ile Glu Gly Leu Thr Glu Lys Ser Ser	

235	240	245	250	
cag atc gtg gac cct tgg gag agg ttg ttt aag att ttg aat gtt gtt				940
Gln Ile Val Asp Pro Trp Glu Arg Leu Phe Lys Ile Leu Asn Val Val	255	260	265	
gga atg aga tgt gaa tgg cag atg gat aaa gga aga cga agc tat gga				988
Gly Met Arg Cys Glu Trp Gln Met Asp Lys Gly Arg Arg Ser Tyr Gly	270	275	280	
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Asp Ile Leu His Arg Met Lys Asp Leu Cys Arg Tyr Met Asn Asn Phe	285	290	295	
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Asp Ser Glu Ala His Ala Lys Tyr Lys Asn Gln Val Val Tyr Ser Thr	300	305	310	
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Met Leu Val Phe Phe Lys Asn Ala Phe Gln Tyr Val Asn Ser Ile Gln	315	320	325	330
cca tct ctc ttc caa ggt cct aat gcc ccg agc caa gtt cca ctg gtt				1180
Pro Ser Leu Phe Gln Gly Pro Asn Ala Pro Ser Gln Val Pro Leu Val	335	340	345	
ctt ctt gaa gat gta tgc aat gtg tat ggt gat gta gaa att gat cgt				1228
Leu Leu Glu Asp Val Ser Asn Val Tyr Gly Asp Val Glu Ile Asp Arg	350	355	360	
aat aaa cac atc cat aaa aag agg aaa cta gct gaa gga aga gaa aaa				1276
Asn Lys His Ile His Lys Lys Arg Lys Leu Ala Glu Gly Arg Glu Lys	365	370	375	
acc atg agt tca gac gat gaa gac tgt tgc gcg aaa gga aga aat cgt				1324
Thr Met Ser Ser Asp Asp Glu Asp Cys Ser Ala Lys Gly Arg Asn Arg	380	385	390	
cac att gta gtc aat aaa gcc gaa ctt gct aac tcc act gaa gtg tta				1372
His Ile Val Val Asn Lys Ala Glu Leu Ala Asn Ser Thr Glu Val Leu	395	400	405	410
gaa agc ttt aaa ttg gcc agg gag agc tgg gag ttg ctc tat tcc cta				1420
Glu Ser Phe Lys Leu Ala Arg Glu Ser Trp Glu Leu Leu Tyr Ser Leu	415	420	425	
gaa ttc ctt gac aaa gaa ttt aca agg att tgc ttg gcc tgg aag acg				1468
Glu Phe Leu Asp Lys Glu Phe Thr Arg Ile Cys Leu Ala Trp Lys Thr	430	435	440	
gat act tgg ctt tgg tta aga atc ttc ctc act gat atg atc atc tat				1516
Asp Thr Trp Leu Trp Leu Arg Ile Phe Leu Thr Asp Met Ile Ile Tyr	445	450	455	
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Gln Gly Gln Tyr Lys Lys Ala Ile Ala Ser Leu His His Leu Ala Ala	460	465	470	

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Leu Gln Gly Ser Ile Ser Gln Pro Gln Ile Thr Gly Gln Gly Thr Leu	
475 480 485 490	
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Glu His Gln Arg Ala Leu Ile Gln Leu Ala Thr Cys His Phe Ala Leu	
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Gly Glu Tyr Arg Met Thr Cys Glu Lys Val Leu Asp Leu Met Cys Tyr	
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Met Val Leu Pro Ile Gln Asp Gly Gly Lys Ser Gln Glu Glu Pro Ser	
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Lys Val Lys Pro Lys Phe Arg Lys Gly Ser Asp Leu Lys Leu Leu Pro	
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Cys Thr Ser Lys Ala Ile Met Pro Tyr Cys Leu His Leu Met Leu Ala	
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Cys Phe Lys Leu Arg Ala Phe Thr Asp Asn Arg Asp Asp Met Ala Leu	
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Gly His Val Ile Val Leu Leu Gln Gln Glu Trp Pro Arg Gly Glu Asn	
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ctt ttc ctg aaa gct gtc aat aaa att tgc caa caa gga aat ttc caa	1996
Leu Phe Leu Lys Ala Val Asn Lys Ile Cys Gln Gln Gly Asn Phe Gln	
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tat gag aat ttt ttc aat tac gtt aca aat att gat atg ctg gag gaa	2044
Tyr Glu Asn Phe Phe Asn Tyr Val Thr Asn Ile Asp Met Leu Glu Glu	
620 625 630	
ttt gcc tac ttg aga act cag gaa ggt ggg aaa att cat ctg gaa tta	2092
Phe Ala Tyr Leu Arg Thr Gln Glu Gly Gly Lys Ile His Leu Glu Leu	
635 640 645 650	
cta ccc aat caa gga atg ctg atc aag cct tct agc cct ccc atg ggg	2140
Leu Pro Asn Gln Gly Met Leu Ile Lys Pro Ser Ser Pro Pro Met Gly	
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gct gac agg cac cac act gta act cga ggc atc acc aaa ggc gtg aag	2236
Ala Asp Arg His His Thr Val Thr Arg Gly Ile Thr Lys Gly Val Lys	
685 690 695	

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 700 705 710

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 Ala Ser Gly Ser Arg Trp Arg Pro Thr Pro Pro Pro Leu Leu Leu Leu  
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 Leu Leu Leu Ala Leu Ala Ala Arg Ala Asp Gly Leu Glu Phe Gly Gly  
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 Gly Pro Gly Gln Trp Ala Arg Tyr Ala Arg Trp Ala Gly Ala Ala Ser  
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agc ggc gag ctc agc ttc agc ctg cgc acc aac gcc acg cgc gcg ctg 309  
 Ser Gly Glu Leu Ser Phe Ser Leu Arg Thr Asn Ala Thr Arg Ala Leu  
 50 55 60 65

ctg ctc tac ctg gac gac ggc ggc gac tgc gac ttc ctg gag ctg ctg 357  
 Leu Leu Tyr Leu Asp Asp Gly Gly Asp Cys Asp Phe Leu Glu Leu Leu

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ctg gtg gac ggc cgc ctg cgg ctg cgc ttc acg ctt tcg tgc gcc gag				405
Leu Val Asp Gly Arg Leu Arg Leu Arg Phe Thr Leu Ser Cys Ala Glu				
	85	90	95	
ccg gcc acg ctg cag ctg gac acg ccg gtg gcc gac gac cgc tgg cac				453
Pro Ala Thr Leu Gln Leu Asp Thr Pro Val Ala Asp Asp Arg Trp His				
	100	105	110	
atg gtg ctg ctg acc cgc gac gcg cgc cgc acg gcg ctg gcg gtg gac				501
Met Val Leu Leu Thr Arg Asp Ala Arg Arg Thr Ala Leu Ala Val Asp				
	115	120	125	
ggc gag gcc cgc gcc gcc gag gtg cgc tcc aag cgg cgc gag atg cag				549
Gly Glu Ala Arg Ala Ala Glu Val Arg Ser Lys Arg Arg Glu Met Gln				
	130	135	140	145
gtg gcc agc gac ctg ttc gtg ggc ggc atc ccg ccc gac gtg cgc ctc				597
Val Ala Ser Asp Leu Phe Val Gly Gly Ile Pro Pro Asp Val Arg Leu				
	150	155	160	
tcg gcg ctt acg ctg agc acc gtc aag tac gag ccg ccc ttc cgc ggt				645
Ser Ala Leu Thr Leu Ser Thr Val Lys Tyr Glu Pro Pro Phe Arg Gly				
	165	170	175	
ctc ttg gcc aac ctg aag ctg ggc gag cgg ccc ccc gcg ctg ctg ggc				693
Leu Leu Ala Asn Leu Lys Leu Gly Glu Arg Pro Pro Ala Leu Leu Gly				
	180	185	190	
agc cag ggc ctg cgc ggc gcc acc gcc gac ccg ctg tgc gcg ccc gcg				741
Ser Gln Gly Leu Arg Gly Ala Thr Ala Asp Pro Leu Cys Ala Pro Ala				
	195	200	205	
cgc aac ccc tgc gcc aac ggc ggc ctc tgc acc gtg ctg gcc ccc ggc				789
Arg Asn Pro Cys Ala Asn Gly Gly Leu Cys Thr Val Leu Ala Pro Gly				
	210	215	220	225
gag gtg ggc tgc gac tgc agc cac acg ggc ttc ggc ggc aag ttc tgc				837
Glu Val Gly Cys Asp Cys Ser His Thr Gly Phe Gly Gly Lys Phe Cys				
	230	235	240	
agc gaa gag gag cac ccc atg gaa ggt ccg gct cac ctg acg tta aac				885
Ser Glu Glu Glu His Pro Met Glu Gly Pro Ala His Leu Thr Leu Asn				
	245	250	255	
agc gaa gta ggg tcc tta ctg ttc tcc gag ggg ggg gcc ggg aga gga				933
Ser Glu Val Gly Ser Leu Leu Phe Ser Glu Gly Gly Ala Gly Arg Gly				
	260	265	270	
gga gcc ggc gat gtg cac cag cca aca aaa ggc aag gag gag ttt gtg				981
Gly Ala Gly Asp Val His Gln Pro Thr Lys Gly Lys Glu Glu Phe Val				
	275	280	285	
gcg acc ttc aaa ggc aat gag ttc ttc tgc tac gac ctg tca cac aac				1029
Ala Thr Phe Lys Gly Asn Glu Phe Phe Cys Tyr Asp Leu Ser His Asn				
	290	295	300	305

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Pro Ile Gln Ser Ser Thr Asp Glu Ile Thr Leu Ala Phe Arg Thr Leu	
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Gln Arg Asn Gly Leu Met Leu His Thr Gly Lys Ser Ala Asp Tyr Val	
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Asn Leu Ser Leu Lys Ser Gly Ala Val Trp Leu Val Ile Asn Leu Gly	
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Ser Gly Ala Phe Glu Ala Leu Val Glu Pro Val Asn Gly Lys Phe Asn	
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Asp Asn Ala Trp His Asp Val Arg Val Thr Arg Asn Leu Arg Gln His	
370 375 380 385	
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Ala Gly Ile Gly His Ala Met Val Asn Lys Leu His Tyr Leu Val Thr	
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Ile Ser Val Asp Gly Ile Leu Thr Thr Thr Gly Tyr Thr Gln Glu Asp	
405 410 415	
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Tyr Thr Met Leu Gly Ser Asp Asp Phe Phe Tyr Ile Gly Gly Ser Pro	
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Asn Thr Ala Asp Leu Pro Gly Ser Pro Val Ser Asn Asn Phe Met Gly	
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Cys Leu Lys Asp Val Val Tyr Lys Asn Asn Asp Phe Lys Leu Glu Leu	
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Ser Arg Leu Ala Lys Glu Gly Asp Pro Lys Met Lys Leu Gln Gly Asp	
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Leu Ser Phe Arg Cys Glu Asp Val Ala Ala Leu Asp Pro Val Thr Phe	
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Glu Ser Pro Glu Ala Phe Val Ala Leu Pro Arg Trp Ser Ala Lys Arg	
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Thr Gly Ser Ile Ser Leu Asp Phe Arg Thr Thr Glu Pro Asn Gly Leu	
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Leu Leu Phe Ser Gln Gly Arg Arg Ala Gly Gly Gly Ala Gly Ser His	
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Ser Ser Ala Gln Arg Ala Asp Tyr Phe Ala Met Glu Leu Leu Asp Gly	
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His Leu Tyr Leu Leu Leu Asp Met Gly Ser Gly Gly Ile Lys Leu Arg	
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Ala Ser Ser Arg Lys Val Asn Asp Gly Glu Trp Cys His Val Asp Phe	
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Gln Arg Asp Gly Arg Lys Gly Ser Ile Ser Val Asn Ser Arg Ser Thr	
595 600 605	
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Pro Phe Leu Ala Thr Gly Asp Ser Glu Ile Leu Asp Leu Glu Ser Glu	
610 615 620 625	
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Pro Pro Glu Val Trp Thr Ala Ala Leu Arg Ala Gly Tyr Val Gly Cys	
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Val Arg Asp Leu Phe Ile Asp Gly Arg Ser Arg Asp Leu Arg Gly Leu	
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Ala Glu Ala Gln Gly Ala Val Gly Val Ala Pro Phe Cys Ser Arg Glu	
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Leu Gly Arg Val Cys Glu Arg Glu Ala Thr Val Leu Ser Tyr Asp Gly	
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Ser Met Tyr Met Lys Ile Met Leu Pro Asn Ala Met His Thr Glu Ala	
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ggc	tgc	gca	ccc	agt	aaa	ggc	ccc	gaa	acg	ctg	ttt	gcg	ggg	cac	aag	2565	
Gly	Cys	Ala	Pro	Ser	Lys	Gly	Pro	Glu	Thr	Leu	Phe	Ala	Gly	His	Lys		
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Leu	Asn	Asp	Asn	Glu	Trp	His	Thr	Val	Arg	Val	Val	Arg	Arg	Gly	Lys		
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Thr	Glu	Arg	Arg	Phe	Ile	Ser	Val	Val	Pro	Ser	Asn	Phe	Ile	Gly	His		
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gcc	att	gtg	gcc	gat	ccc	gtc	acc	ttc	aag	agt	cgc	agc	agc	tac	ctg	2901	
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Ser Arg Asp Gly Phe Gln Gly Cys Leu Ala Ser Val Asp Leu Asn Gly			
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cgt ctc cca gac ctc atc gcc gac gcc ctg cac cgc att ggg cag gtg			3381
Arg Leu Pro Asp Leu Ile Ala Asp Ala Leu His Arg Ile Gly Gln Val			
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Glu Arg Gly Cys Asp Gly Pro Ser Thr Thr Cys Thr Glu Glu Ser Cys			
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Ala Asn Gln Gly Val Cys Leu Gln Gln Trp Asp Gly Phe Thr Cys Asp			
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tgc acc atg act tcc tat gga ggc cct gtc tgc aat gat ccc ggg acc			3525
Cys Thr Met Thr Ser Tyr Gly Gly Pro Val Cys Asn Asp Pro Gly Thr			
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aca tac atc ttt ggg aag ggg gga gcg ctc atc acc tac acg tgg ccc			3573
Thr Tyr Ile Phe Gly Lys Gly Ala Leu Ile Thr Tyr Thr Trp Pro			
	1140	1145	1150
ccc aat gac agg ccc agc acg agg atg gat cgc ctg gcc gtg ggc ttc			3621
Pro Asn Asp Arg Pro Ser Thr Arg Met Asp Arg Leu Ala Val Gly Phe			
	1155	1160	1165
agc acc cac cag cgg agc gct gtg ctg gtg cgg gtg gac agc gcc tcc			3669
Ser Thr His Gln Arg Ser Ala Val Leu Val Arg Val Asp Ser Ala Ser			
1170	1175	1180	1185
ggc ctt gga gac tac ctg cag ctg cac atc gac cag ggc acc gtg ggg			3717
Gly Leu Gly Asp Tyr Leu Gln Leu His Ile Asp Gln Gly Thr Val Gly			
	1190	1195	1200
gtg atc ttt aac gtg ggc acg gac gac att acc atc gac gag ccc aac			3765
Val Ile Phe Asn Val Gly Thr Asp Asp Ile Thr Ile Asp Glu Pro Asn			
	1205	1210	1215

gcc ata gta agc gac ggc aaa tac cac gtg gtg cgc ttc act cga agc Ala Ile Val Ser Asp Gly Lys Tyr His Val Val Arg Phe Thr Arg Ser 1220 1225 1230	3813
ggc ggc aac gcc acc ctg cag gtg gac agc tgg ccg gtc aac gag cgg Gly Gly Asn Ala Thr Leu Gln Val Asp Ser Trp Pro Val Asn Glu Arg 1235 1240 1245	3861
tac ccg gca gga aac ttt gat aac gag cgc ctg gcg att gct aga cag Tyr Pro Ala Gly Asn Phe Asp Asn Glu Arg Leu Ala Ile Ala Arg Gln 1250 1255 1260 1265	3909
aga atc ccc tac cgg ctt ggt cga gta gta gat gag tgg ctg ctc gac Arg Ile Pro Tyr Arg Leu Gly Arg Val Val Asp Glu Trp Leu Leu Asp 1270 1275 1280	3957
aaa ggc cgc cag ctg acc atc ttc aac agc cag gct gcc atc aag atc Lys Gly Arg Gln Leu Thr Ile Phe Asn Ser Gln Ala Ala Ile Lys Ile 1285 1290 1295	4005
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tac tac aat ggg ctc aag gtg ctg gcg ctg gcc gcc gag agc gac ccc Tyr Tyr Asn Gly Leu Lys Val Leu Ala Leu Ala Ala Glu Ser Asp Pro 1315 1320 1325	4101
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gcc acc acc atc atg gag act acc acc acc atg gcc act acc acc acg Ala Thr Thr Ile Met Glu Thr Thr Thr Met Ala Thr Thr Thr Thr 1365 1370 1375	4245
cgc cgg ggc cgc tcc ccc aca ctg agg gac agc acc acc cag aac aca Arg Arg Gly Arg Ser Pro Thr Leu Arg Asp Ser Thr Thr Gln Asn Thr 1380 1385 1390	4293
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ctg gag gag tgt gag ccc agt act gga gga gag tta ata ttg ccc att Leu Glu Glu Cys Glu Pro Ser Thr Gly Gly Glu Leu Ile Leu Pro Ile 1410 1415 1420 1425	4389
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Phe Val Pro Pro Pro Pro Thr Phe Tyr Pro Phe Leu Thr Gly Val Gly	
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Gly Gly Pro Cys Gln Ala Glu Arg Asp Asp Ser Asp Cys Glu Glu Pro	
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Ile Glu Ala Ser Gly Phe Ala Ser Gly Glu Val Phe Asp Ser Ser Leu	
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ccc ccc acg gac gac gag gac ttt tac acc acc ttt ccc ctg gtc acg	4677
Pro Pro Thr Asp Asp Glu Asp Phe Tyr Thr Thr Phe Pro Leu Val Thr	
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Asp Arg Thr Thr Leu Leu Ser Pro Arg Lys Pro Ala Pro Arg Pro Asn	
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ctc agg aca gat ggg gcc acg ggc gcc cct ggg gtg ctg ttt gcc ccc	4773
Leu Arg Thr Asp Gly Ala Thr Gly Ala Pro Gly Val Leu Phe Ala Pro	
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Ser Ala Pro Ala Pro Asn Leu Pro Ala Gly Lys Met Asn His Arg Asp	
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Pro Leu Gln Pro Leu Leu Glu Asn Pro Pro Leu Gly Pro Gly Ala Pro	
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Thr Ser Phe Glu Pro Arg Arg Pro Pro Pro Leu Arg Pro Gly Val Thr	
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Ser Ala Pro Gly Phe Pro His Leu Pro Thr Ala Asn Pro Thr Gly Pro	
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Gly Glu Arg Gly Pro Pro Gly Ala Val Glu Val Ile Arg Glu Ser Ser	
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Ser Thr Thr Gly Met Val Val Gly Ile Val Ala Ala Ala Ala Leu Cys	
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Ile Leu Ile Leu Leu Tyr Ala Met Tyr Lys Tyr Arg Asn Arg Asp Glu	
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Gln	Ser	Asn	Gly	Ala	Val	Val	Lys	Glu	Lys	Ala	Pro	Ala	Ala	Pro	Lys	
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Thr	Pro	Ser	Lys	Ala	Lys	Lys	Asn	Lys	Asp	Lys	Glu	Tyr	Tyr	Val	*	
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<222> (254) .. (724)

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			Met	Ile	Arg	Phe	Ile	Leu	Ile	Gln	Asn	
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aag	acg	cgc	ctg	gcc	aag	tgg	tac	atg	cag	ttt	gat	337
Lys	Thr	Arg	Leu	Ala	Lys	Trp	Tyr	Met	Gln	Phe	Asp	
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cag	aag	ctg	atc	gag	gag	gtg	cat	gcc	gtg	gtc	acc	385
Gln	Lys	Leu	Ile	Glu	Glu	Val	His	Ala	Val	Val	Thr	
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aaa	cac	acc	aac	ttt	gtg	gag	gtc	ctg	gca	agc	tcc	433
Lys	His	Thr	Asn	Phe	Val	Glu	Val	Leu	Ala	Ser	Ser	
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ctc	tct	gtt	ctg	cag	ttc	cgg	aac	ttt	aag	atc	att	481
Leu	Ser	Val	Leu	Gln	Phe	Arg	Asn	Phe	Lys	Ile	Ile	
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gct	ggc	ctc	tac	ttc	tgc	atc	tgt	gtg	gat	gtc	aat	529
Ala	Gly	Leu	Tyr	Phe	Cys	Ile	Cys	Val	Asp	Val	Asn	
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gct	tac	ctg	gag	gcc	att	cac	aac	ttc	gtg	gag	gtc	577
Ala	Tyr	Leu	Glu	Ala	Ile	His	Asn	Phe	Val	Glu	Val	
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ttc	cac	aat	gtc	tgt	gaa	ctg	gac	ctg	gtg	ttc	aac	625
Phe	His	Asn	Val	Cys	Glu	Leu	Asp	Leu	Val	Phe	Asn	
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tac	acg	gtc	gtg	gac	gag	atg	ttc	ctg	gct	ggc	gaa	673
Tyr	Thr	Val	Val	Asp	Glu	Met	Phe	Leu	Ala	Gly	Glu	
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agc	cag	acg	aag	gtg	ctg	aaa	cag	ctg	ctg	atg	cta	721
Ser	Gln	Thr	Lys	Val	Leu	Lys	Gln	Leu	Leu	Met	Leu	
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 Ala Ala Gly Phe Ser His Leu Asp Arg Arg Glu Arg Val Leu Lys Leu  
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 Gly Glu Ser Phe Glu Lys Gln Pro Arg Cys Ala Phe His Thr Val Arg  
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 Tyr Asp Phe Lys Pro Ala Ser Ile Asp Thr Ser Ser Glu Gly Tyr Leu  
 40 45 50

gag gtt ggt gaa ggt gaa cag gtg acc ata act ctg cca aat ata gaa 246  
 Glu Val Gly Glu Gly Glu Gln Val Thr Ile Thr Leu Pro Asn Ile Glu  
 55 60 65

ggt tca act cca cca gta act gtt ttc aaa ggt tca aaa aaa cct tac 294  
 Gly Ser Thr Pro Pro Val Thr Val Phe Lys Gly Ser Lys Lys Pro Tyr  
 70 75 80

tta aaa gaa tgc att ttg att att aac cat gat act gga gaa tgt cgg 342  
 Leu Lys Glu Cys Ile Leu Ile Ile Asn His Asp Thr Gly Glu Cys Arg  
 85 90 95

cta gaa aaa ctc agc agc aac atc act gta aaa aaa aca aga gtt gaa 390  
 Leu Glu Lys Leu Ser Ser Asn Ile Thr Val Lys Lys Thr Arg Val Glu  
 100 105 110 115

gga agc agt aaa att cag tat cgt aaa gaa caa cag caa caa caa atg 438  
 Gly Ser Ser Lys Ile Gln Tyr Arg Lys Glu Gln Gln Gln Gln Gln Met  
 120 125 130

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 Trp Asn Ser Ala Arg Thr Pro Asn Leu Val Lys His Ser Pro Ser Glu



135	140	145	
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Asp Lys Met Ser Pro Ala Ser Pro Ile Asp Asp Ile Glu Arg Glu Leu			
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aag gca gaa gct agt cta atg gac cag atg agt agt tgt gat agt tca			582
Lys Ala Glu Ala Ser Leu Met Asp Gln Met Ser Ser Cys Asp Ser Ser			
165	170	175	
tca gat tcc aaa agt tca tca tct tca agt agt gag gat agt tct agt			630
Ser Asp Ser Lys Ser Ser Ser Ser Ser Ser Glu Asp Ser Ser Ser			
180	185	190	195
gac tca gaa gat gaa gat tgc aaa tcc tct act tct gat aca ggg aat			678
Asp Ser Glu Asp Glu Asp Cys Lys Ser Ser Thr Ser Asp Thr Gly Asn			
200	205	210	
tgt gtc tca gga cat cct acc atg aca cag tac agg att cct gat ata			726
Cys Val Ser Gly His Pro Thr Met Thr Gln Tyr Arg Ile Pro Asp Ile			
215	220	225	
gat gcc agt cat aat aga ttt cga gac aac agt ggc ctt ctg atg aat			774
Asp Ala Ser His Asn Arg Phe Arg Asp Asn Ser Gly Leu Leu Met Asn			
230	235	240	
act tta aga aat gat ttg cag ctg agt gaa tca gga agt gac agt gat			822
Thr Leu Arg Asn Asp Leu Gln Leu Ser Glu Ser Gly Ser Asp Ser Asp			
245	250	255	
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Asp *			
260			
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Arg Lys Val Leu Lys Glu Val Arg Val Gln Asp Glu Asn Asn Val Cys		

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cac ctc agc ttt gtg cgc tct gtt act atg gac aag tgg aag gac att His Leu Ser Phe Val Arg Ser Val Thr Met Asp Lys Trp Lys Asp Ile 55 60 65 70			246
gag ctt gag aag atg aaa gct ggt ggg aat gct aag ttc cga gag ttc Glu Leu Glu Lys Met Lys Ala Gly Gly Asn Ala Lys Phe Arg Glu Phe 75 80 85			294
ctg gag tct cag gag gat tac gat cct tgc tgg tcc ttg cag gag aag Leu Glu Ser Gln Glu Asp Tyr Asp Pro Cys Trp Ser Leu Gln Glu Lys 90 95 100			342
tac aac agc aga gcc gcg gcc ctc ttt agg gat aag gtg gtc gct ctg Tyr Asn Ser Arg Ala Ala Ala Leu Phe Arg Asp Lys Val Val Ala Leu 105 110 115			390
gcc gaa ggc aga gag tgg tct ctg gag tca tca cct gcc cag aac tgg Ala Glu Gly Arg Glu Trp Ser Leu Glu Ser Ser Pro Ala Gln Asn Trp 120 125 130			438
acc cca cct cag ccc agg acg ctg ccg tcc atg gtg cac cga gtc tct Thr Pro Pro Gln Pro Arg Thr Leu Pro Ser Met Val His Arg Val Ser 135 140 145 150			486
ggc cag ccg cag agt gtg acc gcc tcc tcg gac aag gct ttt gaa gac Gly Gln Pro Gln Ser Val Thr Ala Ser Ser Asp Lys Ala Phe Glu Asp 155 160 165			534
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ctg aac gag aac gtc ctc aag cct gcg cag gag aag gtg aag gag gga 822  
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aag att ttt gat gat gtc tcc agt ggg gtc tct cag ttg gcg tcc aag 870  
 Lys Ile Phe Asp Asp Val Ser Ser Gly Val Ser Gln Leu Ala Ser Lys  
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 Tyr Gln Asn Ser Gly Leu Asp His Phe Gln Asn Ser Asn Ile Asp Gln  
 315 320 325

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Pro Lys Glu Leu Leu Lys Gly Leu Asp Ser Phe Leu Asn Arg Asp Gly	
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 aggtatatct cctacagcta tccctcccc cttccccac ccacaaaaag gtcccagtgt 180  
 gtg atg ttc ccc ttc ctg tgt cca tgt gtt ctc att gtt caa ttc cca 228  
 Met Phe Pro Phe Leu Cys Pro Cys Val Leu Ile Val Gln Phe Pro  
 1 5 10 15  
 cct atg agt gag aac atg tgg gtt tgg ttt ttt tgt cct tgc gat agt 276  
 Pro Met Ser Glu Asn Met Trp Val Trp Phe Phe Cys Pro Cys Asp Ser  
 20 25 30  
 ttg ctg aga atg atg gtt tcc agc ttc atc cat gtc cct gcg aag gac 324  
 Leu Leu Arg Met Met Val Ser Ser Phe Ile His Val Pro Ala Lys Asp  
 35 40 45  
 atg aac tca ccc ttt ttt atg gaa tac tac aca gcc ata aaa agg aat 372  
 Met Asn Ser Pro Phe Phe Met Glu Tyr Tyr Thr Ala Ile Lys Arg Asn  
 50 55 60  
 gac aac aca tcc ctt gca ggg aca tgg atg gag caa tag gccattatcc 421  
 Asp Asn Thr Ser Leu Ala Gly Thr Trp Met Glu Gln \*  
 65 70 75  
 gtagcaaact aatgcaggaa gagaaaaccc agtactgcat gttctcactt ataagtggga 481  
 gctaaatgat gagaacacat gaacacaaag aggggaacag acactagggc cgtttagaag 541  
 ttggcggttg gtttgctttt ttntttagnt acangattta ttagnaatgg gtactaggct 601  
 gaataccgtt gtggatggta gtaatcgggt gaacaaagcg cccatgttca caattttagc 661  
 ttattttttc tggttttcgt catgggtaccc cttgtgagtg tgagttatat gtttggttga 721  
 tatttatcgg ttattggatt tgggtccctgg gtggtgtttt cgtggagtgg tggggttggt 781  
 gtgattcttg tgtttggctg tgggtgtttaa aagaggtgta ggttggtgac ccgggtgttg 841  
 tccacgttat tggctttgat gagggccctt tttgtgggtg gtgtttggtg ttgttttggg 901

ctggtcggtg gccctatttg tgctttttgt tggtagtggc ttcttggtgg tcggtgagcg 961  
gtgtgtt 968

<210> 30  
<211> 1082  
<212> DNA  
<213> Homo sapiens

<220>  
<221> CDS  
<222> (168) .. (725)

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gagctcggat ccactagtcc agtgtggtgg aattccggcc aagtagagct ccgtcctgac 120  
gcgccgcctc ccgtgggctc cggccggcta agccgcggcg gacaact atg ctg aaa 176  
Met Leu Lys  
1  
gcc aag atc ctc ttc gtg ggg cct tgc gag agt gga aaa act gtt ttg 224  
Ala Lys Ile Leu Phe Val Gly Pro Cys Glu Ser Gly Lys Thr Val Leu  
5 10 15  
gcc aac ttt ctg aca gaa tct tct gac atc act gaa tac agc cca acc 272  
Ala Asn Phe Leu Thr Glu Ser Ser Asp Ile Thr Glu Tyr Ser Pro Thr  
20 25 30 35  
caa gga gtg agg atc cta gaa ttt gag aac ccg cat gtt acc agc aac 320  
Gln Gly Val Arg Ile Leu Glu Phe Glu Asn Pro His Val Thr Ser Asn  
40 45 50  
aac aaa ggc acg ggc tgt gaa ttc gag cta tgg gac tgt ggt ggc gat 368  
Asn Lys Gly Thr Gly Cys Glu Phe Glu Leu Trp Asp Cys Gly Gly Asp  
55 60 65  
gct aag ttt gag tcc tgc tgg ccg gcc ctg atg aag gat gct cat gga 416  
Ala Lys Phe Glu Ser Cys Trp Pro Ala Leu Met Lys Asp Ala His Gly  
70 75 80  
gtg gtg atc gtc ttc aat gct gac atc cca agc cac cgg aag gaa atg 464  
Val Val Ile Val Phe Asn Ala Asp Ile Pro Ser His Arg Lys Glu Met  
85 90 95  
gag atg tgg tat tcc tgc ttt gtc caa cag ccg tcc tta cag gac aca 512  
Glu Met Trp Tyr Ser Cys Phe Val Gln Gln Pro Ser Leu Gln Asp Thr  
100 105 110 115  
cag tgt atg cta att gca cac cac aaa cca ggc tct gga gat gat aaa 560  
Gln Cys Met Leu Ile Ala His His Lys Pro Gly Ser Gly Asp Asp Lys  
120 125 130

gga agc ctg tct ttg tcg cca ccc ttg aac aag ctg aag ctg gtg cac	608
Gly Ser Leu Ser Leu Ser Pro Pro Leu Asn Lys Leu Lys Leu Val His	
135 140 145	
tca aac ctg gaa gat gac cct gag gag atc cgg atg gaa ttc ata aag	656
Ser Asn Leu Glu Asp Asp Pro Glu Glu Ile Arg Met Glu Phe Ile Lys	
150 155 160	
tat tta aaa agc ata atc aac tcc atg tct gag agc aga gac agg gag	704
Tyr Leu Lys Ser Ile Ile Asn Ser Met Ser Glu Ser Arg Asp Arg Glu	
165 170 175	
gag atg tca att atg acc tag cc agccttcacc tgggactgcc acatccccag	757
Glu Met Ser Ile Met Thr *	
180 185	
tgaaatcagc atgtttctcg gtgcagatct gaaatcacat ccagctcctg atgttttctt	817
ctccctctga ctgcagagga agtggttcta cctgcaggaa ggcacctgtc acacagggcg	877
ttcactcaga ccatctgtgc tctgccctga gttcagttga gaaaatccta ttatcaaatt	937
tggatttcct ggccccagaa cttcccaaag acctgtaaaa tggagggatt taccacctca	997
catatgtcca gttaaacagt ttgtggactt gtaaccgtcg cagcccaatg atacaacagt	1057
agtttaatca cgtgaaaaaa aaaaa	1082

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<210> 31
<211> 1517
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (666) .. (1406)

<220>
<221> misc_feature
<222> (1) ... (1517)
<223> n = a,t,c or g

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gccgacctag ggggtgctggc cgccctctgt gagaaaactg acaatgacat ccgggcctgc	120
atcaacacccc tgcagttcct gtacagccgg ggccagcggg agctgagcgt gcgggacgtg	180
caggccacac gcgtgggcct caaggaccag cgcagagggc tcttctcggt gtggcaggag	240
gtcttccagc tgctcagagc ccagagcacc ccacctgcag gcgccgtgtg ggccaggacc	300
cgcacctgcc tgctgacaca ctctgctgg gtgacgggga cgcgggctcc ctcacctccg	360

cctcacagcg attctaccgt gtcctgcatg ccgctgcctc tgcgggagag cacgagaagg 420  
tggtccaggg cttgtttgac aacttcctgc gtctgcggct gcgagactcc agcctgggtg 480  
ctgtgtgtgt ggccctcgac tggctggcct tcgatgacct gctggcgggg gctgctcatc 540  
acagccagag cttccagctg ctgcgctacc cacccttcct gcccgaggcc ttccatgtgc 600  
tgtttgcttc cagccacaca cccaggatca ccttccccag cagccagcag gagggcccaga 660  
accgg     atg agc cag atg agg aac ctg atc cag acg ctg gtg tcc ggc 707  
          Met Ser Gln Met Arg Asn Leu Ile Gln Thr Leu Val Ser Gly  
          1                         5                         10  
atc gcg cca gcc acg cgc agc cgg gcc acg ccc cag gcc ctg ctc ctc 755  
Ile Ala Pro Ala Thr Arg Ser Arg Ala Thr Pro Gln Ala Leu Leu Leu  
15                         20                         25                         30  
gat gcc ctc tgc ctg ctc ctg gac att ctt gcg ccc aag ctc cgc ccc 803  
Asp Ala Leu Cys Leu Leu Leu Asp Ile Leu Ala Pro Lys Leu Arg Pro  
                               35                         40                         45  
gtg agc aca cag ctg tac agc acc cgt gaa aag caa cag ctg gcc agc 851  
Val Ser Thr Gln Leu Tyr Ser Thr Arg Glu Lys Gln Gln Leu Ala Ser  
                               50                         55                         60  
ctg gtg ggc acg atg ctc gct tac agc ctg acc tac cgc cag gag cgc 899  
Leu Val Gly Thr Met Leu Ala Tyr Ser Leu Thr Tyr Arg Gln Glu Arg  
                               65                         70                         75  
acg ccc gat ggc cag tac atc tac agg ctg gag ccg aac gtg gag gaa 947  
Thr Pro Asp Gly Gln Tyr Ile Tyr Arg Leu Glu Pro Asn Val Glu Glu  
                               80                         85                         90  
ctc tgc cgc ttc cct gag ctg cct gcc cgc aag ccc ctc acc tac cag 995  
Leu Cys Arg Phe Pro Glu Leu Pro Ala Arg Lys Pro Leu Thr Tyr Gln  
95                         100                         105                         110  
acg aag cag ctc atc gcc cgc gag atc gag gtg gag aag atg cgg cgg 1043  
Thr Lys Gln Leu Ile Ala Arg Glu Ile Glu Val Glu Lys Met Arg Arg  
                               115                         120                         125  
gcg gag gct tct gcc cgg gta gag aac agc ccc cag gtg gat ggg agc 1091  
Ala Glu Ala Ser Ala Arg Val Glu Asn Ser Pro Gln Val Asp Gly Ser  
                               130                         135                         140  
ccc cca ggg ctc gag ggt ctg ctg ggg ggc att ggg gag aaa ggg gtg 1139  
Pro Pro Gly Leu Glu Gly Leu Leu Gly Gly Ile Gly Glu Lys Gly Val  
                               145                         150                         155  
cac cga cct gcc cca cgc aac cat gag cag cgg ctg gag cac atc atg 1187  
His Arg Pro Ala Pro Arg Asn His Glu Gln Arg Leu Glu His Ile Met  
160                         165                         170  
agg cga gcg gcc cgg gag gaa cag cct gag aag gac ttc ttt gga cgt 1235  
Arg Arg Ala Ala Arg Glu Glu Gln Pro Glu Lys Asp Phe Phe Gly Arg



175	180	185	190	
gtg gtc gtc agg agc aca gca gtc ccg agt gca ggg gac acg gcc ccg				1283
Val Val Val Arg Ser Thr Ala Val Pro Ser Ala Gly Asp Thr Ala Pro				
	195	200	205	
gag cag gac tca gtg gag cgg cgc atg ggc aca gcg gtg ggc agg agc				1331
Glu Gln Asp Ser Val Glu Arg Arg Met Gly Thr Ala Val Gly Arg Ser				
	210	215	220	
gag gtc tgg ttc cgc ttc aac gag ggt gtc tcc aac gcc gtg cgg cgc				1379
Glu Val Trp Phe Arg Phe Asn Glu Gly Val Ser Asn Ala Val Arg Arg				
	225	230	235	
agc ctg tac atc agg gac ttg ctc tag ttctc tgagccgcgg acatgccctc				1431
Ser Leu Tyr Ile Arg Asp Leu Leu *				
	240	245		
gcattgcttc ccgcagagtg cagagacagg aagctggaga tgtctttata aagtcacacc				1491
tttacagact gtaaaaaaaaa aaaaaa				1517

<210> 32  
 <211> 618  
 <212> DNA  
 <213> Homo sapiens  
  
 <220>  
 <221> CDS  
 <222> (498) .. (572)

<400> 32	
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gacaataactg taaatgtggt tcattccatc aacagacact gagccctgcg acgtgcctgg	120
ctctattcta catctgaggg acacaaggtg aacaagacca ggccactgta ttcaacatct	180
acatttaatg gaaatttttg aaagaagact tgagagatta taacagtggg cttcagcatc	240
agggagtagg cctagaagaa gaggaggtca agaagtggct tttcttatta tcttcttaac	300
tcttcaaatt tttactatga gcaattatta ttttttatta aaattttagg ccaggcttat	360
ggctgtaatc ctagcagttt gggaggccaa ggtgagcgga tcacttgagg ttgggagttc	420
gagaccagcc tgaccaacat ggagaaactc tgtctctact taaaaaaaaa taaaaatta	480
gccaggcatg gtggcac	
atg cct gta gtc cca gct act cag gag act gag	530
Met Pro Val Val Pro Ala Thr Gln Glu Thr Glu	
1 5 10	
gca ggg gaa ttg cct gaa cct ggg aga cag agg ttg caa tga gccaaaga	579
Ala Gly Glu Leu Pro Glu Pro Gly Arg Gln Arg Leu Gln *	

tcacgcctcg tgccgaattc ttggcctcga gggccaaat

618

<210> 33  
 <211> 1188  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (313) .. (849)

<400> 33

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gctcgtcgcg ggcgctcccc gccctctgct gccagaacct tggggatgtg cctagaccgc 120

gcgcagcaca cgtccggggc aaccgcgagc agaacaaacc tttggcgggc ggccaggagg 180

ctccctccca gccaccgcc cctccagcg cctttttttc ccccatata atacaagatc 240

ttccttctc agttccctta aagcacagcc cagggaacc tcctcacagt tttcatccag 300

ccacgggcca gc atg tct ggg ggc aaa tac gta gac tcg gag gga cat 348  
 Met Ser Gly Gly Lys Tyr Val Asp Ser Glu Gly His  
 1 5 10

ctc tac acc gtt ccc atc cgg gaa cag ggc aac atc tac aag ccc aac 396  
 Leu Tyr Thr Val Pro Ile Arg Glu Gln Gly Asn Ile Tyr Lys Pro Asn  
 15 20 25

aac aag gcc atg gca gac gag ctg agc gag aag caa gtg tac gac gcg 444  
 Asn Lys Ala Met Ala Asp Glu Leu Ser Glu Lys Gln Val Tyr Asp Ala  
 30 35 40

cac acc aag gag atc gac ctg gtc aac cgc gac cct aaa cac ctc aac 492  
 His Thr Lys Glu Ile Asp Leu Val Asn Arg Asp Pro Lys His Leu Asn  
 45 50 55 60

gat gac gtg gtc aag att gac ttt gaa gat gtg att gca gaa cca gaa 540  
 Asp Asp Val Val Lys Ile Asp Phe Glu Asp Val Ile Ala Glu Pro Glu  
 65 70 75

ggg aca cac agt ttt gac ggc att tgg aag gcc agc ttc acc acc ttc 588  
 Gly Thr His Ser Phe Asp Gly Ile Trp Lys Ala Ser Phe Thr Thr Phe  
 80 85 90

act gtg acg aaa tac tgg ttt tac cgc ttg ctg tct gcc ctc ttt ggc 636  
 Thr Val Thr Lys Tyr Trp Phe Tyr Arg Leu Leu Ser Ala Leu Phe Gly  
 95 100 105

atc ccg atg gca ctc atc tgg ggc att tac ttc gcc att ctc tct ttc 684  
 Ile Pro Met Ala Leu Ile Trp Gly Ile Tyr Phe Ala Ile Leu Ser Phe

110	115	120	
ctg cac atc tgg gca gtt gta cca tgc att aag agc ttc ctg att gag			732
Leu His Ile Trp Ala Val Val Pro Cys Ile Lys Ser Phe Leu Ile Glu			
125	130	135	140
att cag tgc atc agc cgt gtc tat tcc atc tac gtc cac acc gtc tgt			780
Ile Gln Cys Ile Ser Arg Val Tyr Ser Ile Tyr Val His Thr Val Cys			
	145	150	155
gac cca ctc ttt gaa gct gtt ggg aaa ata ttc agc aat gtc cgc atc			828
Asp Pro Leu Phe Glu Ala Val Gly Lys Ile Phe Ser Asn Val Arg Ile			
	160	165	170
aac ttg cag aaa gaa ata taa at gacatttcaa ggatagaagt atacctgatt			881
Asn Leu Gln Lys Glu Ile *			
175			
ttttttcctt ttaattttcc tgggtgccaat ttcaagttcc aagttgctaa tacagcaaca			941
atztatgaat tgaattatct tgggtgaaaa taaaaagatc actttctcag ttttcataag			1001
tattatgtct cttctgagct atttcatcta tttttggcag tctgaatttt taaaacccat			1061
ttaaattttt ttccttacct ttttatttgc atgtggatca accatcgctt tattggctga			1121
gatatgaaca tattgttgaa aggtaatttg agagaaatat gaagaactga ggaggaaaaa			1181
aaaaaaa			1188
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<213>	Homo sapiens		
<220>			
<221>	CDS		
<222>	(515) .. (697)		
<400>	34		
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tcactatggt ggtcaggctg gtctcgaact cccgaccgca agtgatccac ccgccttggc			120
ctcccaaagt gctgggatta caagcttgag ccaactgcacc cagcctggaa agtatattta			180
tgaaagggtt gcactccaca aaagcatctt tgctaggggtg tcaaggaaga gatcactaaa			240
ccaaccccaa cacatccata caattccagc aatctagaga gggctgggtcc ttttcctttt			300
ctggattatt ttctgttctc agtaaaacaa gtattttactg tgatactgaa aactgggaa			360
attaacactg attaagatat tttaaact gagtcttaata tataacagaa ccagttttca			420

tcagaatgct tttacgtcac attcagtgaa gtgttacgct aatatattct acagccctga 480

agatagaaaa aaggtttctc tccaggtatg agat atg gta caa aaa tac att 532  
Met Val Gln Lys Tyr Ile  
1 5

ttt cca cat aca aaa gag aga aaa aaa caa aga cat gtg gcg ggt ggc 580  
Phe Pro His Thr Lys Glu Arg Lys Lys Gln Arg His Val Ala Gly Gly  
10 15 20

gag ggg agg ccc aat ccc aac acc cta caa ggt tcc atg gaa tgg aga 628  
Glu Gly Arg Pro Asn Pro Asn Thr Leu Gln Gly Ser Met Glu Trp Arg  
25 30 35

agg aac aaa aaa atc ccc aat tat ttt ggg gta aga tgt gcc cca gaa 676  
Arg Asn Lys Lys Ile Pro Asn Tyr Phe Gly Val Arg Cys Ala Pro Glu  
40 45 50

aag gtg aaa tct atg caa taa aa cccaggtttt cttcaaatct agcatctagg 729  
Lys Val Lys Ser Met Gln \*  
55 60

atttctatca gagtttcaaa taatcagaat ttctatcaga atttctaccc tgaggtgaca 789

cctactaact gtaggttctt tcattaaaaa tgaagacatc tttcaccaga atgtatcaag 849

ctataaaaact ggcttcagag cctacactta gccagagtgg aaaaaaaaaa tagtgcatat 909

tttcgacagc a 920

<210> 35  
<211> 1233  
<212> DNA  
<213> Homo sapiens

<220>  
<221> CDS  
<222> (133)..(1122)

<400> 35  
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ggcttcctag tgagtcggcg gctgatttag aaggagggttc aggctacggt gagccgaagc 120

cacacaggag cc atg gaa gtg gca gag ccc agc agc ccc act gaa gag 168  
Met Glu Val Ala Glu Pro Ser Ser Pro Thr Glu Glu  
1 5 10

gag gag gag gaa gag gag cac tcg gca gag cct cgg ccc cgc act cgc 216  
Glu Glu Glu Glu Glu Glu His Ser Ala Glu Pro Arg Pro Arg Thr Arg  
15 20 25

tcc aat cct gaa ggg gct gag gac cgg gca gta ggg gca cag gcc agc 264  
Ser Asn Pro Glu Gly Ala Glu Asp Arg Ala Val Gly Ala Gln Ala Ser

30

35

40

gtg ggc agc cgc agc gag ggt gag ggt gag gcc gcc agt gct gat gat	312
Val Gly Ser Arg Ser Glu Gly Glu Gly Glu Ala Ala Ser Ala Asp Asp	
45 50 55 60	
ggg agc ctc aac act tca gga gcc ggc cct aag tcc tgg cag gtg ccc	360
Gly Ser Leu Asn Thr Ser Gly Ala Gly Pro Lys Ser Trp Gln Val Pro	
65 70 75	
ccg cca gcc cct gag gtc caa att cgg aca cca agg gtc aac tgt cca	408
Pro Pro Ala Pro Glu Val Gln Ile Arg Thr Pro Arg Val Asn Cys Pro	
80 85 90	
gag aaa gtg att atc tgc ctg gac ctg tca gag gaa atg tca ctg cca	456
Glu Lys Val Ile Ile Cys Leu Asp Leu Ser Glu Glu Met Ser Leu Pro	
95 100 105	
aag ctg gag tgc ttc aac ggc tcc aaa acc aac gcc ctc aat gtc tcc	504
Lys Leu Glu Ser Phe Asn Gly Ser Lys Thr Asn Ala Leu Asn Val Ser	
110 115 120	
cag aag atg att gag atg ttc gtg cgg aca aaa cac aag atc gac aaa	552
Gln Lys Met Ile Glu Met Phe Val Arg Thr Lys His Lys Ile Asp Lys	
125 130 135 140	
agc cac gag ttt gca ctg gtg gtg gtg aac gat gac acg gcc tgg ctg	600
Ser His Glu Phe Ala Leu Val Val Val Asn Asp Asp Thr Ala Trp Leu	
145 150 155	
tct ggc ctg acc tcc gac ccc cgc gag ctc tgt agc tgc ctc tat gat	648
Ser Gly Leu Thr Ser Asp Pro Arg Glu Leu Cys Ser Cys Leu Tyr Asp	
160 165 170	
ctg gag acg gcc tcc tgt tcc acc ttc aat ctg gaa gga ctt ttc agc	696
Leu Glu Thr Ala Ser Cys Ser Thr Phe Asn Leu Glu Gly Leu Phe Ser	
175 180 185	
ctc atc cag cag aaa act gag ctt ccg gtc aca gag aac gtg cag acg	744
Leu Ile Gln Gln Lys Thr Glu Leu Pro Val Thr Glu Asn Val Gln Thr	
190 195 200	
att ccc ccg cca tat gtg gtc cgc acc atc ctt gtc tac agc cgt cca	792
Ile Pro Pro Pro Tyr Val Val Arg Thr Ile Leu Val Tyr Ser Arg Pro	
205 210 215 220	
cct tgc cag ccc cag ttc tcc ttg acg gag ccc atg aag aaa atg ttc	840
Pro Cys Gln Pro Gln Phe Ser Leu Thr Glu Pro Met Lys Lys Met Phe	
225 230 235	
cag tgc cca tat ttc ttc ttt gac gtt gtt tac atc cac aat ggc act	888
Gln Cys Pro Tyr Phe Phe Phe Asp Val Val Tyr Ile His Asn Gly Thr	
240 245 250	
gag gag aag gag gag gag atg agt tgg aag gat atg ttt gcc ttc atg	936
Glu Glu Lys Glu Glu Glu Met Ser Trp Lys Asp Met Phe Ala Phe Met	
255 260 265	

ggc agc ctg gat acc aag ggt acc agc tac aag tat gag gtg gca ctg	984
Gly Ser Leu Asp Thr Lys Gly Thr Ser Tyr Lys Tyr Glu Val Ala Leu	
270 275 280	
gct ggg cca gcc ctg gag ttg cac aac tgc atg gcg aaa ctg ttg gcc	1032
Ala Gly Pro Ala Leu Glu Leu His Asn Cys Met Ala Lys Leu Leu Ala	
285 290 295 300	
cac ccc ctg cag cgg cct tgc cag agc cat gct tcc tac agc ctg ctg	1080
His Pro Leu Gln Arg Pro Cys Gln Ser His Ala Ser Tyr Ser Leu Leu	
305 310 315	
gag gag gag gat gaa gcc att gag gtt gag gcc act gtc tga accatcc	1129
Glu Glu Glu Asp Glu Ala Ile Glu Val Glu Ala Thr Val *	
320 325 330	
ctgtacatct gcaccttctt gtgcaaggaa gtccttggcc taaagccttg gttctcaaac	1189
tggttctctt gggacctccg ggggtggggg gttccaggag gcat	1233